



CURRICULUM VITAE

Name : Villholth
First Name : Karen Grothe
Year of Birth : 1960
Nationality : Danish

Key Qualifications

Education

1994 Ph.D. Specialised in flow and transport processes in soil and groundwater. Technical University of Denmark.
1989 M.Sc. Engineering. Specialised in soil physics, hydrology, hydrodynamics, groundwater flow, solute transport and computational hydraulics. University of Washington, Seattle, USA.
1988 M.Sc. Chemical Engineering. Technical University of Denmark.

Language Skills

	<u>Written</u>	<u>Spoken</u>
Danish	Mother tongue	Mother tongue
English	Fluent	Fluent
Spanish	Good	Fluent
German	Fair	Fair
French	Poor	Poor

Professional Experience

Sep. 2007 - date Senior Researcher, GEUS, Geological Survey of Denmark and Greenland, Copenhagen, Denmark.
2007 - 2008 Senior Associate, International Water Management Institute (IWMI), CGIAR Research Centre with headquarters in Colombo, Sri Lanka. Working from Denmark.
2004 - 2007 Senior Researcher, International Water Management Institute (IWMI), CGIAR Research Centre with headquarters in Colombo, Sri Lanka.
2001 - 2004 Water Resources and Soil and Groundwater Specialist, Water Management Department, Water Resources Division, DHI Water & Environment, Denmark.
2000 - 2001 Technical Advisor, Environmental Sector Programme Support, Danida, Bolivia.
1994 - 2000 Consultant and Research Professional. Department of Groundwater, Solid Waste and Microbiology, VKI, Denmark.
1994 - 2000 Associate Lecturer and Research Associate, Institute of Hydrodynamics and Water Resources (ISVA), Technical University of Denmark.

- 1996 Seconded Faculty, Asian Institute of Technology, Thailand.
- 1990 - 1994 Consultant. Hydrological field investigations and numerical modelling. Water Resources Department, Danish Hydraulic Institute
- 1993 Research Associate, University of Colorado, Boulder, CO, USA.
- 1989 - 1993 Ph.D. Student and Teaching Assistant. Flow and transport phenomena in clay till soils with macropore structure. Field, laboratory and numerical Investigations. Institute of Hydrodynamics and Hydraulic Engineering (ISVA), Technical University of Denmark.
- 1990 Consultant. Field investigation techniques and parameter estimation guidelines for hydrological modelling, India. Danish Hydraulic Institute.
- 1988 Research Assistant. Modelling of hydrological processes in forest ecosystems. Institute of Hydrodynamics and Hydraulic Engineering (ISVA), Technical University of Denmark.

Professional Affiliations

- 2009 - date President of the Danish Chapter of IAH (International Association of Hydrogeologists). <http://www.iah.org/>
- 2009 - date Member of the Program Council for the international conference: 'Towards Sustainable Groundwater in Agriculture – An International Conference Linking Science and Policy, Jun. 15-17, 2010, San Francisco, CA, USA. <http://ag-groundwater.org/index.html>
- 2008 Member of the International Scientific Committee of the international conference: 'Water Unifies – Water Scarcity, Global Changes, and Groundwater Management Responses, Dec. 1-5, 2008, Univ. of Calif., Irvine, CA, USA. <http://www.waterunifies.com/index.html>
- 2008 - date Member of the working group of the GWES (Groundwater for Emergency Situations) project of the sixth phase of the UNESCO IHP Programme (2002-2007) under the title 'Identification and management of strategic groundwater bodies to be used for emergency situations as a result of extreme events or in case of conflicts'.
- 2008 - date Senior Research Advisor, Coordination Unit for Research in Climate Change Adaptation ([Koordineringsenhed for forskning i klimatilpasning](#) (KFT)), Established under the government's strategy for adaptation to climate change in Denmark.
- 2007 - date Member of the The Marcelino Botín Foundation, an interdisciplinary think tank to address global water issues. The Director is Professor Ramón Llamas, Emeritus Professor at the Complutense University, in Madrid, Spain.
- 2007 - date Member of national task force for climate change research in development assistance under the three Danish research networks: Danish Development Research Network (DDRN), Danish Water Forum (DWF), and Danish Research Network for International Health (ENRECAHEALTH).
- 2007 - date Member of IAH (International Association of Hydrogeologists). <http://www.iah.org/>
- 2008 - date Member of IAH Burdon Groundwater Network. <http://burdon.wwgw.org/>
- 2007 - date Member of IAHS (International Association of Hydrological Sciences). <http://www.iugg.org/associations/iahs.html>
- 2006 - date Member of ISGSD (International Society of Groundwater for Sustainable Development), <http://www.isgsd.org/process/index3.asp>
- 1988 - date IDA, The Society of Danish Engineers
- 1988 - date Reviewer on several international, scientific journals, including Journal of Hydrology, Water Resources Research, Water Resources Management, Hydrogeology Journal.

Awards

- 1988 Received a scholarship from the Valle Scholarship and Scandinavian Exchange Program for 1 one-year M.Sc. degree in civil and environmental engineering at the University of Washington, Seattle, Washington, USA.

List of Assignments and Projects

- 2010 Southern African Development Community SADC Groundwater and Drought Management Project. Regional Groundwater Vulnerability Mapping. Project Leader. *Client: World Bank, Washington D.C., USA.*
- 2009 - 2014 CLIVET - Impacts of Climate Change on Water Resources and Agriculture - and Adaptation Strategies in Tanzania (2009-2014). Project Leader. *Client: Consultative Research Committee for Development Research (FFU), Ministry of Foreign Affairs of Denmark.*
- 2009 - 2010 'The long-term impacts of point source pollution sources on groundwater quality' (In Danish: Punktkilders langsigtede påvirkning af grundvandsressurens kvalitet.). Project Leader. *Client: Region Hovedstaden.*
- 2009 - date 'Demonstration of the Groundwater for Emergency Situations (GWES) methodology for identifying, characterizing, and managing strategic groundwater resources in the Orissa state, east coast of India, impacted by recurrent storms and related coastal floods'. A pilot project under the GWES – Groundwater for Emergency Situations project under UNESCO IHP.
- 2008- Coordination Unit for Adaptation to Climate Change Research (KFT)). Senior Research Advisor. Established under the government's strategy for adaptation to climate change in Denmark.
- 2008 - 2010 [SPLASH, European Union Water Initiative](#) European Research Area Network (EUWI Era-Net). Researcher. *Client: EU FP6.*
- 2008 - 2010 CLIWAT - Adaptive and sustainable water management and protection of society and nature in an extreme climate. Modelling of impacts of climatic change on saltwater intrusion in coastal areas in the North Sea Region and options for mitigation Project Participant. *Client: The Interreg IVB, North Sea Regional Programme.*
- 2008 - 2010 PRECIUS - Prediction of Climatic Impacts on Pesticide Leaching to the Aquatic Environments (2008-2010). Modelling of impacts of climatic change on agricultural practices and pesticide leaching in Denmark and options for mitigation. Project participant. *Client: Danish Environmental Protection Agency.*
- 2007 IWRM – ABOVE AND BELOW GROUND. Extending GWP's support for IWRM approaches in River Basins and Water Catchments to effective management of groundwater aquifers. Consultant. *Client: Global Water Partnership (GWP).*
- 2006 - 2007 TARMI – Tsunami Area Resources Management Initiative (2006-2008). Groundwater assessment, rehabilitation and optimal use in the wake of the tsunami. Project Leader. *Client: Agriculture and Agri-Food Canada.*
- 2005 - 2007 Comprehensive Assessment of Water Management in Agriculture (2001-2007). Contributing to the assessment of the role of groundwater in agriculture. Lead Author on chapter of final Synthesis Report. <http://www.iwmi.cgiar.org/Assessment/> *Client: Governments of the Netherlands, Switzerland, Sweden, Taiwan, Japan, Austria, as well as the CGIAR, FAO, OPEC, CGIAR Challenge Program on Water and Food, the CGIAR Gender and Diversity Program, the EU through the ISIIM Project, and the Rockefeller Foundation and in-kind contribution from assessment participants.*
- 2005 - 2007 Groundwater Governance in Asia – Capacity Building through Action Research in the Indo-Gangetic Basin (IGB) and the Yellow River Basin (YRB) (2005-2008). Project Leader. Training and research program development for groundwater managers and journalists in five Asian countries. <http://www.waterandfood.org/gga/index.htm> *Client: CGIAR Challenge Program on Water and Food.*

- 2005 - 2006 Bridging Relief Work with More Long-term Assessment and Remediation of Tsunami Effects on Groundwater and Water Supply in Sri Lanka (2005-2006). Project Leader. Groundwater monitoring and relief support to groundwater rehabilitation. *Client: CARE.*
- 2003 Danish Water Environment Plan III, Denmark. Project Participant and Modeller. Various measures to reduce nutrient load to Odense Fiord were evaluated through the development of an integrated surface water and groundwater model. The model is based on the MIKE SHE and MIKE 11 modelling codes. *Client: DMU for Danish Forest and Nature Agency.*
- 2003 Piedmonte Water Resources Action Plan, Italy (2002-2004). Project Participant and Modeller. A water action plan with emphasis on agricultural and industrial load to the groundwater and surface water system was developed for the Piedmonte Region, Italy. The region covers an area of more than 25.000 km² and several water resources numerical tools have been applied as support for the planning. *Client: Intecno-DHI for Region Piedmonte.*
- 2002 - 2003 Development and Validation of Model for Risk Assessment of Pesticides in Surface Water, Denmark (PestSurf) (1998-2002). Project Participant and Modeller. Development of a numerical model tool for evaluation of the risk of pesticide exposure in surface waters. The tool was produced for the Danish EPA and is used for pesticide registration purposes. *Client: Danish Environmental Protection Agency.*
- 2001 Strategic Review Mission of the component 'Water and Watershed Resources Management in the Estelí River Basin' (Follow-up on the Water Action Plan)" under the Environmental Sector Programme Support, Nicaragua (2001-2002). Hydrologist and Watershed Expert. *Client: Nordeco for Danida.*
- 2000 - 2001 Environmental Sector Programme Support, Bolivia. Technical Advisor to the component "Environmental Management in the Potosí Department", which included capacity development in the local environmental authorities, awareness raising, watershed management, and implementation of environmental, technical solutions, *Client: Danida.*
- 1999 Human Resources Development in Relation to Water, Burkina Faso. Water Resource Management Specialist. Danish Delegation to Burkina Faso Concerning Human Resources Development in Relation to Water. *Client: Danida.*
- 1999 Investigation of the Chemical Speciation of Arsenic in Contaminated Groundwater, Denmark. Project Participant. Field investigation and chemical speciation modelling of arsenic groundwater contamination. *Client: Information Centre on Contaminated Sites.*
- 1999 Consultancy Mission for Danida project: "Water Resources Management Sector Study", Bangladesh. Hydro-geologist and Water Quality Specialist. *Client: Danida.*
- 1995 - 1998 Transport of Pesticides from Agricultural Areas to the Water Environment via Colloid-facilitated Leaching through Macropores, Denmark. Project Manager. Field, laboratory and numerical modelling investigation of the effect of colloids on pesticide transport in soils. *Client: Danish Environmental Protection Agency.*
- 1995 - 1997 Transport of PAH-Compounds via Mobile Colloids in Soil and Groundwater, Denmark. Project Manager. Field and laboratory investigation of the effect of colloids on PAH mobility in groundwater. *Client: Danish Environmental Protection Agency.*
- 1998 Consultancy Mission for Danida project, Guatemala. Trainee. Consultancy mission for Danida project: "Proposal for a Regional Conference on Integrated Water Management in Central America". Initial support and technical assistance in the process of improving, consulting and validating a regional water status action plan for Central America. *Client: Danida.*
- 1997 Review Mission of Danida project, Uganda. Trainee. Review Mission of Danida project: "Strengthening of Water Resources Monitoring and Assessment Services". Analysis and assessment of the progress and status of an on-going project, including recommendations for adjustment in project organisation, budget and timing. *Client: Danida.*

1996 Teaching at Asian Institute of Technology (AIT), Thailand. Danida-seconded faculty. Teaching the Master of Science level course "Water Quality Management". School of Environment, Resources, and Development.

Teaching and Training

- 2009 Contributed to the planning and teaching of the course **Groundwater Management for Water Managers: A role of hydrogeological science** as part of the Splash Project 'Support of the African Groundwater Network (AGW-Net) in capacity development, University of Witwatersrand, Johannesburg, South Africa, July 6-10, 2009.
- 2004 - date Supervised two Ph.D. projects in collaboration with the University of Copenhagen and IWMI: **Impact of Tsunami on Groundwater in Sri Lanka** and **Integrating Remote Sensing and Hydrological Modeling for Groundwater Resources Assessment and Sustainable Use in the North China Plains**.
- 2009 Organized and taught the [FIVA](#) Ph.D. course **Groundwater Management in a Global Context** at the University of Copenhagen, May 11-15, 2009.
- 2009 Teaching three sessions on groundwater in disaster management at the M.Sc. Program Master in Disaster Management at the University of Copenhagen, Apr. 27, 2009.
- 2008 Teaching the course 'El Agua Subterránea y su Gestión Técnica –Social' (**Groundwater and its Technical and Social Management**). ExpoAgua, Guanajuato, Mexico. Sep. 24-26, 2008.
- 2005 - 2008 Project leader for a large research and capacity building project on groundwater governance in five East and South East Asian countries. Two annual international research and training programs, each consisting of a 5-week intensive classroom course and 16-week field action research program for groundwater researchers and managers.
- 2001 - 2003 Performed capacity building activities for M.Sc. students at the Technical University of Denmark and visiting professionals at DHI within water resources management and the use and application of modelling decision support tools.
- 2000 - 2001 Developed, planned and implemented capacity building efforts within the Environmental Sector Programme Support in Potosí, Bolivia.
- 1999 Human Resources Development in Relation to Water, Burkina Faso. As a Water Resource Management Specialist, participated in a mission to assess teaching and research gaps in the water sector in Burkina Faso and to define collaboration possibilities with the Danish resource base.
- 1997 - 1998 Contributed to an in-house training course for professionals on "Integrated Environment and Water Management", VKI, Denmark.
- 1996 Developed and conducted a M.Sc. level course on "Water Quality Management" for engineering students at Asian Institute of Technology, Bangkok, Thailand.
- 1994 -2000 While associated with the Institute of Hydrodynamics & Water Resources, Technical University of Denmark as a Research Associate:
- Conducted various M.Sc. courses (Hydrology, Irrigation & Water Resources, Groundwater Hydrology)
 - Advised Master and Ph.D. students on soil and groundwater hydraulics and contaminant transport and numerical modelling thereof.
 - Developed and conducted a new M.Sc. course in "Integrated Water Resources Management"
 - Developed a Ph.D. course in "Colloid-Facilitated Transport"

Publications

Books

- B1 1994 **Villholth, K.G.:** *Field and Numerical Investigation of Macropore Flow and Transport Processes*. Series Paper No. 57. Institute of Hydrodynamics and Hydraulic Engineering, Technical University of Denmark, 230 pp.
- B2 2006 Sharma, B.R. and **K.G. Villholth** (Eds): *Groundwater Research and Management: Integrating Science into Management Decisions*. Proceedings of IWMI-ITP-NIH International Workshop on: "Creating Synergy between Groundwater Research and Management in South and Southeast Asia", Feb. 8-9, 2005, Roorkee, India. Groundwater Governance in Asia Series. International Water Management Institute, South Asia Regional Office, New Delhi, India, 270 pp. ISBN: 92-9090- 647-2.
- B3 2007 Giordano, M. and **K.G. Villholth** (Eds.): *The Agricultural Groundwater Revolution: Opportunities and Threats to Development*. CABI, in ass. w. IWMI. 419 pp. ISBN-13: 978 1 84593 172 8.
- B4 2009 Mukherji, A., **K.G. Villholth**, B.R. Sharma and J. Wang: *Groundwater Governance in the Indo-Gangetic and Yellow River Basins: Realities and Challenges*. Series: IAH – Selected Papers on Hydrogeology, Volume 15. CRC Press, Taylor & Francis Group. Pp. 325. ISBN 978-0-415-46580-9.

Peer-reviewed Journal Papers and Invited Book Chapters

- P1 1994 Wildenschild, D., K.H. Jensen, **K.G. Villholth** and T.H. Illangasekare: A laboratory analysis of the effect of macropores on solute transport. *Gr. Wat.*, 32 (3), 381-389.
- P2 1998 **Villholth, K.G.**, K.H. Jensen, and J. Fredericia: Flow and transport processes in a macroporous subsurface-drained glacial till soil. I: Field investigations. *J. Hyd.*, 207, 98-120.
- P3 1998 **Villholth, K.G.** and K.H. Jensen: Flow and transport processes in a macroporous subsurface-drained glacial till soil. II: Model analysis. *J. Hyd.*, 207, 121-135.
- P4 1999 **Villholth, K.G.:** Colloid characterization and colloidal phase partitioning of polycyclic aromatic hydrocarbons in two creosote-contaminated aquifers in Denmark. *Env. Sci. Techn.*, 33(5); 691-699.
- P5 1999 Lægdsmand, M., **K.G. Villholth**, M. Ullum, and K.H. Jensen: Processes of colloid mobilization and transport in macroporous soil monoliths. *Geoderma*, 93, 33-59.
- P6 1999 Jarvis, N.J., **K.G. Villholth**, and B. Ulén: Modelling particle mobilization and leaching in macroporous soil. *Eur. J. Soil Sci.*, 50 (4), 621-632.
- P7 2000 **Villholth, K.G.**, N.J. Jarvis, O.H. Jacobsen, and H. de Jonge: Field Investigations and Modelling of Particle-Facilitated Pesticide Transport in Macroporous Soil. *J. Environ. Qual.*, 29, 1298-1309.
- P8 2002 Jørgensen, P.R., M. Hoffmann, J.P. Kistrup, C. Bryde, R. Bossi, and **K.G. Villholth**: Preferential Flow and Pesticide Transport in a Clay-Rich Till: Field, Laboratory and Modelling Analysis. *Water Resour. Res.*, 38 (11), 1246, doi:10.1029/2001WR000494.
- P9 2004 Kjaergaard, C., H.C.B. Hansen, C.B. Koch, and **K.G. Villholth**: Properties of Water-Dispersible Colloids from Macropore Deposits and Bulk Horizons of an Agrudalf. *Soil Sci. Soc. Am. J.*, 68, 1844-1852.
- P10 2006 **Villholth, K.G.:** Groundwater assessment and management: implications and opportunities of globalization. *Hydrogeol. J.*, 14: 330–339.

- P11 2006 Illangasekare, T., S.W. Tyler, T.P. Clement, **K.G. Villholth**, A.P.G.R.L. Perera, J. Obeysekera, A. Gunatilaka, C.R Panabokke, D.W. Hyndman, K.J. Cunningham, J.J. Kaluarachchi, W. W-G. Yeh, M-R Van Genuchten, and K.H. Jensen: Impacts of the 2004 Tsunami on Groundwater Resources in Sri Lanka. *Water Resources Research*, 42(5). W05201, doi:10.1029/2006WR004876.
- P12 2006 **Villholth, K.G.**, A.S.P. Manamperi, and N. Bürgi: Chemical characteristics of tsunami-affected groundwater and lagoon on the east coast of Sri Lanka. Paper presented at the 32nd WEDC International Conference. Sustainable Development of Water Resources, Water Supply and Environmental Sanitation. Colombo, Sri Lanka, Nov. 13-17, 2006.
- P13 2007 Shah, T., J.J. Burke, and **K.G. Villholth** Groundwater: a global assessment of scale and significance. Chapter 10, 395-423. In: D. Molden (Ed.): *Water for Food, Water for Life*. Comprehensive Assessment of Water Management in Agriculture Synthesis Report. Earthscan. ISBN 1844073971.
- P14 2007 **Villholth, K.G.**, Tsunami impacts on groundwater and water supply in eastern Sri Lanka. *Waterlines*. July, 2007, 26(1), 8-11.
- P15 2007 **Villholth, K.G.**, M. Giordano: Groundwater use in a global perspective – Can it be managed? In: Giordano, M. and K.G. Villholth (Eds.): *The Agricultural Groundwater Revolution: Opportunities and Threats to Development*, 393-402. CABI, in ass. w. IWMI. ISBN-13: 978 1 84593 172 8.
- P16 2007 Lashari, B., J. McKay, and **K. Villholth**: Institutional and legal groundwater management framework: Lessons learnt from South Australia for Pakistan. *Int. J. Environ. And Develop.*, 4(1): 45-59.
- P17 2008 **Villholth, K.G.**, P. Amerasinghe, and P. Jeyakumar: Tsunami impacts on shallow groundwater and associated water supplies on the east coast of Sri Lanka. In: P. Battacharya, AL. Ramanathan, A.B. Mukherjee, J. Bundshuh, D. Chandrasekharam, and A.K. Keshari (Eds.): *Groundwater for Sustainable Development: Problems, Perspectives and Challenges*. AA Balkema (Taylor & Francis Group), pp 211-222.
- P18 2008 **Villholth, K.G.**, A.S.P. Manamperi, P. Jeyakumar, G. Jegan, M. Thilipan, and V. Navalani: Local populations' perceptions of the water quality and the water supply situation and their coping with the 2004 Sumatra-Andaman tsunami on the east coast of Sri Lanka. *Natural Hazards* (Submitted).
- P19 2008 **Villholth, K.G.**: Water and ethics in food production and provision - How to ensure water and food security and equity into the 2100 century In: Llamas, R, L.M. Cortina, and A. Mukherji (Eds): *Water Ethics*. Marcelino Botin Water Forum 2007. Taylor and Francis/Balkema, Leiden, the Netherlands, pp 81 - 94. ISBN: 978-0-415-47303-3.
- P20 2008 **Villholth, K.G.**: Comprehensive Assessment of Consequences and Options for Agricultural Groundwater Use. In: M. Bhatnagar (Ed.): *Groundwater Management: Sustainable Approaches*. Icfai University Press, Hyderabad, India, pp 143 - 161.
- P21 2009 **Villholth, K.G.**, P. Jeyakumar, P.H. Amerasinghe, A.S.P. Manamperi, M. Vithanage, R.R. Goswami, and C.R. Panabokke: Tsunami impacts and rehabilitation of groundwater supply: Lessons learned from Eastern Sri Lanka. In: Jha, M.K. (Ed.): *Natural and Anthropogenic Disasters: Vulnerability, Preparedness and Mitigation*. Capital Publishing Company, New Delhi, India and Springer, The Netherlands.
- P22 2009 **Villholth, K.G.** and L.D. Rajasooriyar: Groundwater resources and management challenges in Sri Lanka – An overview. *Water Res. Mgt.* DOI: 10.1007/s11269-009-9510-6.
- P23 2009 **Villholth, K.G.**, A. Mukherji, B.R. Sharma, and J. Wang: The role of groundwater in agriculture, livelihoods, and rural poverty alleviation in the Indo-Gangetic and Yellow River basins: A synthesis. In: A. Mukherji, K.G. Villholth, B.R. Sharma and J. Wang (Eds.): *Groundwater Governance in the Indo-Gangetic and Yellow River Basins: Realities and Challenges*. Taylor & Francis Group, pp. 3 - 28.

- P24 2009 **Villholth, K.G.:** Towards better management of groundwater resources – lessons from an integrated capacity building project in the Indo-Gangetic and Yellow River basins. In: A. Mukherji, K.G. Villholth, B.R. Sharma and J. Wang (Eds.): *Groundwater Governance in the Indo-Gangetic and Yellow River Basins: Realities and Challenges*. Taylor & Francis Group, pp 29 - 42.
- P25 2009 Sun, R., Y. Liu, Y Qian and **K.G. Villholth:** Agricultural groundwater issues in North China: A case study from Zhengzhou municipal area. In: A. Mukherji, K.G. Villholth, B.R. Sharma and J. Wang (Eds.): *Groundwater Governance in the Indo-Gangetic and Yellow River Basins: Realities and Challenges*. Taylor & Francis Group, pp183 – 200.
- P26 2009 Krishnan, S., A. Islam, D. Machiwal, D.R. Sena and **K.G. Villholth.** Using the living wisdom of well drillers to construct digital groundwater data bases across Indo-Gangetic basin. In: A. Mukherji, K.G. Villholth, B.R. Sharma and J. Wang (Eds.): *Groundwater Governance in the Indo-Gangetic and Yellow River Basins: Realities and Challenges*. Taylor & Francis Group, pp 247 - 263.
- P27 2009 Sun, R., Jin, M., M. Giordano, and **K.G. Villholth:** Urban and rural groundwater use in Zhengzhou, China: Challenges in joint management. *Hydr. J.* - DOI 10.1007/s10040-009-0452-0.
- P28 2009 Vithanage, M., **K. G. Villholth**, K. Mahatantila, P. Engesgaard, and K. H. Jensen: Effect of well cleaning and pumping on groundwater quality of a tsunami-affected coastal aquifer in eastern Sri Lanka. *Water Resour. Res.*, 45, W07501, Doi:10.1029/2008WR007509.
- P29 2009 **Villholth, K.G.**, A. Mukherji, B.R. Sharma, and J. Wang: The realities and challenges of contemporary groundwater-based smallholder irrigated farming across the Indus, Ganges and Yellow River Basins. *Trends and Sustainability of Groundwater in Highly Stressed Aquifers* (Proc. of Symposium JS.2 at the Joint IAHS & IAH Convention, Hyderabad, India, Sep. 6-12 2009). IAHS Publ. 329, 2009. p.89-102.
- P30 2009 Vithanage, M., **K.G. Villholth**, K. Mahatantila, P. Engesgaard, and K.H. Jensen: Effect of the Indian Ocean tsunami on groundwater quality in coastal aquifers in Eastern Sri Lanka. *Science of Tsunami Hazards*, 28 (3), 218-231.
- P31 2009 Jayasekera, D.L., J.J. Kaluarachchi, **K.G. Villholth:** Groundwater stress and vulnerability in rural coastal aquifers of the Kalpitiya Peninsula, Sri Lanka. *Environ. Monit. and Assessm.* (Submitted).
- P32 2009 **Villholth, K.G.**, J.C. Refsgaard, H.J. Henriksen, L.F. Jørgensen. R. Thomsen, L., and O. Frimodt: Groundwater Management and Protection in Denmark - Review of Advances and Challenges (In preparation).
- P33 2009 **Villholth, K.G:** How to harmonize virtual water trade, future water management and policy dialogue In: Garrido, A., E.L. Gunn, L.M. Cortina (Eds): *Re-thinking Paradigms: Water and Food Security*. Marcelino Botín Water Forum 2009. Taylor and Francis/Balkema, Leiden, the Netherlands (In preparation).
- P34 2009 Shu, Y, K.H. Jensen, **K.G. Villholth**, and S. Stisen: MIKE SHE simulation of groundwater irrigation in the North China Plain: crop water use impacts and optimization in the alluvial plain of Mt. Taihang. *Groundwater* (In preparation).

Conference Papers, Reports, and Invited Talks

- R1 1988 **Villholth, K.G.** and K.H. Jensen: Conceptual modelling of nitrogen leaching from cultivated areas. Proceedings, Nordic Hydrological Conference, Rovaniemi, Finland, August 1-3, 1988.
- R2 1988 **Villholth, K.G.:** Water balance simulation of a Norway spruce plantation. Report to an EEC-project on the effects of acid deposition on forest ecosystems. Laboratory of Environmental Science and Ecology, Technical University of Denmark.

- R3 1990 **Villholth, K.G.**, K.H. Jensen, and J. Fredericia: Field tracer experiment on preferential flow. Meeting held Oct. 24, 1990. ATV-Committee concerning groundwater pollution and the Groundwater Centre, Technical University of Denmark.
- R4 1990 **Villholth, K.G.**, K.H. Jensen, and J. Fredericia: Field investigations of preferential flow behaviour. NPO-project B19. National Agency of Environmental Protection, Denmark. 1991
- R5 1991 **Villholth, K.G.**, K.H. Jensen, and J. Fredericia: Field investigations of preferential flow behaviour. IAHS Publication No. 204: Hydrological Interactions between Atmosphere, Soil and Vegetation, G. Kienitz et al. (Eds.), Proceedings of IUGG, Vienna, August 1991.
- R6 1991 **Villholth, K.G.**: Hydrological Computerized Modelling System (SHE). Vol V: Guidelines for Field Investigations for Hydrological Modelling Using SHE. Danish Hydraulic Institute. Prepared in collaboration with the National Institute of Hydrology, Roorkee, India.
- R7 1993 **Villholth, K.G.** and K.H. Jensen: Experimental and numerical investigations of macropore flow and transport. Proceedings, Ground Water Modelling Conference, Golden, Colorado, June 9-12, 1993. International Ground Water Modelling Center.
- R8 1995 Styczen, M. and **K.G. Villholth**: Pesticide Modelling and Models. Bekæmpelsesmiddel-forskning fra Miljøstyrelsen, Nr. 9. National Agency of Environmental Protection, Denmark, 149 pp.
- R9 1995 **Villholth, K.G.** and M. Styczen: Pesticides in Groundwater - Risk Assessment. Vand & Jord, Årg. 2, Nr. 1, p. 8-11. In Danish.
- R10 1995 **Villholth, K.G.** M. Styczen, and M. Thorsen: Modelling leaching of pesticides. ATV-Committee on Soil and Groundwater. Winter Meeting, 1995.
- R11 1995 **Villholth, K.G.**: Transport of PAH by colloids in groundwater - Danish and international case-studies. Research projects concerning groundwater contamination, ATV-Committee on Soil and Groundwater.
- R12 1997 **Villholth, K.G.**, A. Brun, F. Christensen and O. Hjelmar: Colloid-facilitated transport of pesticides and other sorbing contaminants in soil and groundwater. Ministry of the Environment. National Agency of Environmental Protection, Denmark.
- R13 1997 Jarvis, N. and **K.G. Villholth**: Modelling colloid-facilitated pesticide transport in macroporous soils. NJF Seminar: Preferential Flow in Soil and its Importance for Water Flow Distribution and Transport of Nutrients and Pesticides. The Royal Veterinary and Agricultural University, Copenhagen, Denmark, Nov. 24-26.
- R14 1997 **Villholth, K.G.**: Do creosote compounds in groundwater have unexpected transport mechanisms? Miljøforskning, 33, 37-40. In Danish.
- R15 1998 Holm, P.E, **Villholth, K.G.**, and O.W. Asmussen: Investigation of the Chemical Speciation of Arsenic in Contaminated Groundwater. Orientering, Oktober, 1998. Fredensborg County and the Information Centre on Contaminated Sites. In Danish.
- R16 1998 Hoffmann, M., J. Kistrup, C. Bryde, P.R. Jørgensen, N.O. Jørgensen, R. Bossi, and **K.G. Villholth**: Pesticide transport in moraine clay – Field investigation of deep fractures. Geologisk Nyt, 2, 17-19. In Danish.
- R17 1999 Ryan J.N., G.R. Aiken, D.A. Backhus, **K.G. Villholth**, and C.M. Hawley C.M: Investigating the potential for colloid- and organic matter-facilitated transport of polycyclic aromatic hydrocarbons in crude-oil contaminated ground water. In U.S. Geological Survey Toxic Substances Hydrology Program – Proceedings of the Technical Meeting, Charleston, South Carolina, March 8-12, 1999 – Volume 3 of 3 – Subsurface Contamination from Point Sources (eds. D.W. Morgenwalp and H.T. Buxton), U.S. Geological Survey Water-Resources Investigation Report 99-4018C, 211-222.
- R18 1999 Hoffmann, M., Kistrup, J., Bryde, C., Jørgensen, P.R., Jørgensen, N.O., Bossi, R. and **K.G. Villholth**: In situ transport experiment in saturated fractured till. In: N.O. Jørgensen et al. (Eds): Abstract Volume. Conference on Mass Transport in Fractured Aquifers and Aquitards. May 14-16, 1998. Geological Institute, University of Copenhagen, 85.

- R19 1999 Hoffmann, M., Kistrup, J., Bryde, C., Jørgensen, P.R., Jørgensen, N.O., Bossi, R. and **K.G. Villholth**: Vertical transport of solutes through saturated fractured till – Mathematical modeling of field experiment. Geological Society of America, Annual Meeting, Denver, Colorado. October 25-28, 1999
- R20 2000 Holm, P.E., K. Broholm, O. Hjelmar **K.G. Villholth**, O.W. Asmussen, and P. Kjeldsen: Development of Method for Testing of Leaching of Organic Compounds from Soil and Waste Products. Ministry of the Environment. National Agency of Environmental Protection, Denmark. Environmental Project, NO. 579. In Danish.
- R21 2000 Jacobsen, O.H., **K.G. Villholth**, M. Ullum, and P. Møldrup: Pesticides bound to soil particles can leach. Pesticides – Consequences for the Environment. The World of Nature (Naturens Verden). Feb. 2000, 19-21. In Danish.
- R22 2003 Holm, J. and **K.G. Villholth**, C. Petersen and C.B. Koch: Facilitated Transport of Pesticides. Ministry of the Environment. National Agency of Environmental Protection, Denmark. Pesticides Research No. 67.
- R23 2004 Nielsen, K., H.E. Andersen, S.E. Larsen, B. Kronvang, M. Stjernholm, M. Styczen, R.N. Poulsen, **K.G. Villholth**, J. Krogsgaard, K.I. Dahl-Madsen, A. Friis-Christenssen, T. Uhrenhodt, I.S. Hansen, S.E. Pedersen, O. Jørgensen J. Windolf, M.H. Jensen, J.C. Refsgaard, J. Rølmer Hansen, V. Ermtsen, C. D. Børgesen, and L. Wiggers: Odense Fjord – Scenarios for Reduction of Nutrients. Danmarks Miljøundersøgelser (National Environmental Research Institute, Denmark). 276 pp. Report from DMU nr. 485. <http://faglige-rapporter.dmu.dk>. In Danish.
- R24 2005 **Villholth, K.G.**: Comprehensive Assessment of Consequences and Options for Agricultural Groundwater Use. Proceedings of the Workshop: Groundwater Governance and Management - An IWRM Perspective in Arid/Semi-Arid Climates”, Cairo, Egypt, April 4-7, 2005. ASAGW-Cairo2005/T2-6. (http://www.iwmi.cgiar.org/assessment/Synthesis/Groundwater_contributed_documents.htm).
- R25 2005 UNICEF: Consequences of the Tsunami on the Coastal Aquifer in Eastern Sri Lanka – Guidelines on Wells Rehabilitation. Trincomalee, May, 2005.
- R26 2005 **Villholth, K.G.**, P.H. Amerasinghe, P. Jeyakumar, C.R. Panabokke, O. Woolley, M.D. Weerasinghe, N. Amalraj, S. Prathepaan, N. Bürgi, D.M.D.S. Lionelrathne, N. G. Indrajith, and S.R.K. Pathirana: Tsunami Impacts on Shallow Groundwater and Associated Water Supply on the East Coast of Sri Lanka. Colombo, Sri Lanka. International Water Management Institute (IWMI). ISBN 92-9090-622-7. 68 pp. (<http://www.iwmi.cgiar.org/TSUNAMI/Index.asp>).
- R27 2006 Jousma, G., F. Roelofsen, S. Vasak, R. Boak, R. Chatterjee, **K.G. Villholth**, K. Riemann, and C. Tindimugaya: Guideline on exploitable groundwater resources - Concept and methodology for estimation. IGRAC, Utrecht, The Netherlands. Report nr. GP 2005-2 (Not published).
- R28 2006 **Villholth, K.G.**, P. Amerasinghe, and P. Jeyakumar: Tsunami impacts on shallow groundwater and associated water supplies on the east coast of Sri Lanka. Proceedings of the International Groundwater Conference, New Delhi, India, Feb. 1-4, 2006.
- R29 2006 **Villholth, K.G.**: The trace of the tsunami in groundwater – Experiences from investigations in Sri Lanka (In Danish). Geologisk Nyt.. Aug. 2006, 4-8.
- R30 2006 **Villholth, K.G.**: Integrating science into groundwater management decisions. In: Sharma, B.S. and **K.G. Villholth** (Eds.). *Groundwater Research and Management: Integrating Science into Management Decisions*. Proceedings of IWMI-ITP-NIH International Workshop on: "Creating Synergy between Groundwater Research and Management in South and Southeast Asia", Feb. 8-9, 2005, Roorkee, India. Groundwater Governance in Asia Series. International Water Management Institute, South Asia Regional Office, New Delhi, India, p. 258-270.

- R31 2006 **Villholth, K.G.** and B.R. Sharma: Creating Synergy between Groundwater Research and Management in South and South East Asia. In: Sharma, B.S. and **K.G. Villholth** (Eds.). *Groundwater Research and Management: Integrating Science into Management Decisions*. Proceedings of IWMI-ITP-NIH International Workshop on: "Creating Synergy between Groundwater Research and Management in South and Southeast Asia", Feb. 8-9, 2005, Roorkee, India. Groundwater Governance in Asia Series. International Water Management Institute, South Asia Regional Office, New Delhi, India, p. 1-13.
- R32 2006 **Villholth, K.G.**: Salinity Impacts of the Tsunami on Shallow Groundwater and Associated Water Supply on the East Coast of Sri Lanka. Invited talk. Groundwater in Emergencies. IAH, RedR-IHE, Hydrogeological Group of the Geological Society. Burlington House, Piccadilly, London, May 8, 2006.
- R33 2006 Hogan, M.B., R.R. Goswami, **K.G. Villholth**, T.H. Illangasekare, and T.P. Clement: Understanding the Flow and Mixing Dynamics of Saline Water Discharged into Coastal Freshwater Aquifers. Selected peer-reviewed paper presented at the SWIM-SWICA meeting. Cagliari, Chia Laguna, Sardinia, Italy. September 24-29, 2006.
- R34 2007 Goswami, R.R., **K.G. Villholth**, M. Vithanage, T.P. Clement, T. Sakaki, T. Illangasekare and K.H. Jensen: Variable Density Transport during Well Rehabilitation after a Tsunami-induced Saltwater Contamination Event. ModelCARE, Copenhagen, Denmark, September 10-13, 2007.
- R35 2008 Vithanage, M., **K.G. Villholth**, P. Engesgaard, and K.H. Jensen: Sustainability of coastal aquifer systems in the east coast of Sri Lanka – Estimation of safe yield under saltwater stress from population increase and climate change. Report to PFRA, Agriculture and Agri-food Canada.
- R36 2008 Van Gilse, N.C.O.v., **K.G. Villholth**: Natural hydro-geological support and limitations, based on geo-electrical measurements, to utilization of fresh groundwater resources in the Kalpitiya Peninsula, Sri Lanka. IWMI report.
- R37 2008 **Villholth, K.G.**: Cleaning wells after seawater flooding. Emergency guidelines. WHO technical note No. 3.
http://www.who.int/water_sanitation_health/hygiene/envsan/technotes/en/index.html
- R38 2008 T.H. Illangasekare, M. Vithanage, K.H. Jensen, J. Obeysekera, P. Engesgaard and **K.G. Villholth**: Validation of a new conceptual model for salinity persistence in tsunami affected coastal aquifers – intermediate scale experimental study. AGU Joint Assembly, Fort Lauderdale, Florida, May 27-30, 2008.
- R39 2008 **Villholth, K.G.**, M. Vithanage, R.R. Goswami, P. Jeyakumar, and A.S.P. Manamperi: Salinity Impacts of the Indian Ocean Tsunami on Groundwater and Local Water Supply – Lessons Learned from Integrated Research and Support to Rehabilitation. Invited talk. AGU Joint Assembly, Fort Lauderdale, Florida, May 27-30, 2008.
- R40 2008 **Villholth, K.G.**: Impacts of the Indian Ocean Tsunami on Groundwater Salinity and Local Water Supply in Sri Lanka – Lessons Learned from Integrated Research and Support to Rehabilitation'. Key note talk. 2nd Int. Salinity Forum, Adelaide, Australia, Mar. 31 - Apr. 3, 2008.
- R41 2008 **Villholth, K.G.**: Groundwater in big cities, use consequences, impact of climate change and response options' Invited talk for FAU Conference: Cities, Climate Change and Development: Is Urban Change for Sustainability Possible? Copenhagen Business School, Copenhagen, Denmark, May 14-15, 2008. (FAU is the Danish acronym for the Association of Development Researchers in Denmark).
http://www.fau.dk/2008_konferencerapport_final2%5B1%5D.pdf
- R42 2008 **Villholth, K.G.** and L. Lytton: A conceptual framework for how to ensure the sustainable use, management, and protection of groundwater resources for water supply during disasters. Paper invited for the XXXVI IAH Congress, Toyama, Japan, Oct. 26 to Nov. 1, 2008.

- R43 2008 **Villholth, K.G.**, P. Jeyakumar, P.H. Amerasinghe, A.S.P. Manamperi, M. Vithanage, R.R. Goswami, and C.R. Panabokke: Tsunami impacts and rehabilitation of groundwater supply: Lessons learned from Eastern Sri Lanka. Paper invited for the report: Groundwater for Emergency Situations (GWES) Methodological guide - Case studies, UNESCO-IHE.
- R44 2008 **Villholth, K.G.**: El Manejo Sostenible de las Aguas Subterráneas – Una Visión Compartida. Key Note talk invited for the national conference ExpoAgua, Guanajuato, Mexico, Sep. 24-26, 2008.
- R45 2008 Hetzel, F., V. Vaessen, T. Himmelsbach, W. Struckmeier, and **K.G. Villholth**: Groundwater and Climate Change: Challenges and Possibilities. Brief developed in collaboration with BGR and GEUS. http://www.geus.dk/geuspage-dk.htm?http://www.geus.dk/program-areas/water/denmark/rapporter/groundwater_and_climate_change_071108-dk.htm
- R46 2009 **Villholth, K.G.**: Groundwater as a Strategic Resource of Today and Tomorrow in SADC - An integrated and international view. Invited key note presentation at the 3rd SADC Multi-stakeholder Water Dialogue: Watering Development in SADC: Surfacing of the Hidden Resource – Groundwater, Johannesburg, South Africa, May 27-28, 2009.
- R47 2009 Binnerup, S.J., M. Drews, **K.G. Villholth**, T. Henrichs, L. van der Bijl, N. Larsen, L. Koefoed, B. Andersen, T. Timmermann, and L. Moseholm: Mapping of climate research in Denmark - Annexes. Research and evaluation 2/2009. (In Danish: Kortlægning af Klimaforskning i Danmark – Bilag). Prepared in collaboration with the Ministry of Science, Technology and Innovation, the Coordination Unit for Research in Climate Change Adaptation, and the Ministry of Climate and Energy. <http://vtu.dk/publikationer/2009/bilag-kortlaegning-af-klimaforskning-i-danmark/>
- R48 2009 Andersen, B., S. Binnerup, L. van der Bijl, **K.G. Villholth**, M. Drews, I.F. Strand, T. Henrichs, N. Larsen, T. Timmermann, and L. Moseholm: Climate Adaptation - 5 Central Research Themes. Adaptation to climate change research coordination unit (*In Danish*: Klimatilpasning – 5 centrale forskningstemaer. Koordineringsenhed for forskning i klimatilpasning). 32 s. http://klima.au.dk/fileadmin/filer/KFT/klimatilpasning_www.pdf
- R49 2009 **Villholth, K.G.**: How to harmonize virtual water trade and future water management and policy dialogue. Invited presentation for the 4th Marcelino Botín Foundation (MBF) Water Workshop: Re-Thinking Paradigms: Water and Food Security. Santander , Spain, Sep. 22–24, 2009.
- R50 2009 **Villholth, K.G.**: Role of groundwater in irrigated farming in South Asia and China - the constraints and options for water productivity gains. Invited presentation for the Regional R&D Workshop on: Water Saving Irrigation Practices in Rice-based Canal Systems. AIT, Bangkok, Thailand, Oct. 8-9, 2009.
- R51 2009 **Villholth, K.G.**: Danish Water Solutions to a Developing World under Environmental and Climate Stress. Paper prepared for the Danish EPA and with the Danish Water Forum in connection with the UN Climate Change Conference (COP15), Copenhagen, Dec. 7-18, 2009. 20 pp. <http://www.geus.dk/program-areas/water/denmark/globalchallenges.pdf>
- R52 2009 **Villholth, K.G.**: Climate change adaptation with groundwater: development issues with a focus on Asia. Invited presentation to the Holland Water House session 'Groundwater – Key to adaptation' at the UN Climate Change Conference (COP15), Copenhagen, Dec. 7-18, 2009. http://www.unesco.org/water/news/newsletter/223.shtml#news_4
- R53 2009 **Villholth, K.G.**: Groundwater and climate change: challenges and possibilities in developing countries. Invited presentation to the EU side event arranged by the Danish Meteorological Institute: Adapt to Climate Change - Denmark and Developing Nations' at the UN Climate Change Conference (COP15), Copenhagen, Dec. 7-18, 2009.