

1. FULL NAME AND DATE

Surname, names: Kummu, Matti Samuli
 Gender: Male
 Date: 3rd March 2016



2. DATE AND PLACE OF BIRTH, NATIONALITY, CURRENT RESIDENCE

Date and place of birth: 18th of July 1977 in Helsinki, Finland
 Citizenship: Finnish

Contact details: Water & Development Research Group
 Department of Civil and Environmental Engineering
 School of Engineering, Aalto University
 Tietotie 1E, 02150 Espoo,
 Finland

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Note: the former Helsinki University of Technology (TKK) now operates within Aalto University (AALTO). The School of Engineering (AALTO ENG) is one of Aalto's 6 Schools.

3. EDUCATION AND DEGREES AWARDED

12/2008 **Doctor of Science** in Technology (*with distinction*) from the former Helsinki University of Technology (TKK), Water Research Group. Major subject: Hydrology and water resources. Thesis title: "Spatio-temporal scales of hydrological impact assessment in large river basins: the Mekong case". Supervisor: Prof Olli Varis (olli.varis@aalto.fi).

10/2002 **Master of Science** from the former Helsinki University of Technology, Water Research Group. Major subject: Hydraulic Engineering; Minor subject: Geoinformatics. Thesis title: "Roughness characteristics and velocity profile in vegetated and nonvegetated channel". Part of the studies for the M.Sc. degree conducted at: Lund University of Technology (Sweden); University of Zaragoza (Spain); University of Puerto Rico; and Universidad de Chile.

4. OTHER EDUCATION AND TRAINING, QUALIFICATIONS AND SKILLS

2015 Aalto University Pedagogical Training I (25 ECTS)
 2012 Participation to Aalto's mentor programme as a mentee
 2011-2012 Aalto Future Research Leaders' Programme

5. LINGUISTIC SKILLS

	Speaking	Writing	Reading
Finnish	Native	Native	Native
English	Excellent	Excellent	Excellent
Spanish	Very good	Good	Very good
Swedish	Good	Good	Very good

6. CURRENT POSITIONS

2013-present **Assistant professor** (tenure track) at Water & Development Research Group, Aalto University
 2013-2016 **Academy of Finland Postdoctoral fellow**

7. PREVIOUS WORK EXPERIENCE

2015-16 **Visiting scholar** at the ETH Zurich, Switzerland (in total 3 months)
 2015 **Visiting scholar** at the University of Umeå, Sweden (in total 1 month)
 2009-2013 **Postdoctoral fellow** at Water & Development Research Group, Aalto University, Finland (competitive research post).
 2009-2011 **Visiting postdoctoral fellow** at the VU University Amsterdam, Netherlands (in total 9 months)
 2002-2008 **Research scientist and doctoral candidate** at Water Research Group, former Helsinki University of Technology, Finland
 2002-2006 **Research consultant** under Mekong River Commission, based in Cambodia and Lao PDR, employed by Environmental Impact Assessment Centre of Finland Ltd. (in total 4 years)

8. RESEARCH FUNDING, LEADERSHIP, AND SUPERVISION

MAJOR RESEARCH FUNDING

Large competitive research grants (PI stands for principal investigator):

- 2016-2018 **PI:** Emil Aaltonen foundation; Project funding for 3 yr eat-less-water (210'000 EUR)
2013-2016 **PI:** Academy of Finland Postdoctoral fellow; Funding for 3 yr postdoc project (273'410 EUR)
2014-2017 **Responsible leader:** Research project from *Maa- ja vesitekniikan tuki ry.* (150'000 EUR)
2012-2014 **PI:** Aalto ENG Postdoctoral fellow; Funding for 1+1 yr postdoctoral project (110'000 EUR)
2009-2012 **PI:** TKK Postdoctoral fellow; Funding for 3 yr postdoctoral project (180'000 EUR)
2006-2009 **Researcher:** Academy of Finland (#111672); Funding for doctoral studies (157'720 EUR)

Large competitive research projects (where principal or co-principal investigator):

- 2010-2012 **PI:** Modelling component of the Mekong Project 3 – On multiple use of reservoirs under the CGIAR Challenge Programme on Water & Food (95,000 USD)
2010-2012 **Co-PI:** Exploring Mekong Region Futures: Tonle Sap Lake case study. Project led by CSIRO, funded by AusAID and CSIRO (200,000 AUD)

LEADERSHIP IN RESEARCH WORK

Research project manager or co-manager in international research projects:

- 2010-2012 **Team leader & co-principal researcher:** Modelling component of the Mekong Project 3 - On optimizing the management of cascades or systems of reservoirs at catchment level under the CGIAR Challenge Programme on Water & Food Programme 2nd phase: Basin Development Challenge in the Mekong.
2010-2012 **Co-team leader & co-principal researcher:** Modelling component of the Exploring Mekong Region Futures: Tonle Sap Lake case study. Project led by CSIRO, funded by AusAID and CSIRO.
2008-2009 **Co-team leader and co-principal researcher:** Water and Climate Change in the Lower Mekong Basin: Diagnosis and recommendations for adaptation. Funded by Foreign Ministry of Finland.
2009 **Principal researcher:** Investigation of the impact of upstream development on Fishing Lot and the Prek Toal Core Area; work under WCS Cambodia. Cambodia.

SUPERVISION OF POSTDOCTORAL RESEARCHERS

- 2014-2017 Guillaume, J. Graduated 2014 from Australian National University, Australia
2014-2017 Räsänen, T. Graduated 2014 from Aalto University, Finland

SUPERVISION OF UNDERGRADUATE AND POST-GRADUATE STUDENTS

Supervision of Doctoral theses

- 2009–2014 Räsänen, T: “Anthropogenic impacts on hydrology in the Mekong”. Graduated with distinction; best thesis award 2014 of Aalto ENG. Presently postdoc at Aalto University.
2011–2016 Porkka, M: “The role of virtual water trade in physical water scarcity” (-2016)
2016– Munia, H: “Water scarcity in transboundary river basins: global study” (-2020)

Daily supervision of Doctoral theses:

- 2009–2015 Salmivaara, A: “Water resources vulnerability of Southeast Asian river basins” Graduated with distinction; best thesis award 2015 of Aalto ENG. Presently at Natural Resources Institute.
2013– Jalava, M: “Impact of diet change on global water resources” (-2017)
2012– Lauri, H: “Modelling monsoon hydrology: case Mekong” (-2016)
2010– Kattelus, M: “Water-energy-food nexus in Monsoon Asia” (-2016)

Member of a PhD Committee:

- 2010–2013 Arias, M; University of Canterbury, NZ: “Impacts of hydrological alterations in the Mekong Basin to the Tonle Sap ecosystem”. Presently postdoc at Harvard University.
2014– Nguyen Van Khan Triet, University of Potsdam, Germany: “Impact of dike development on the flood hazard in the Mekong Delta” (2014-2017)
2014– Long Hoang Phi, University of Wageningen, Netherlands: “Future hydrological extremes in the Mekong River Basin” (2014-2017)

Supervised Master's theses:

- 2007-2015 Altogether 8 theses instructed (daily supervision) and 2 supervised

Supervised Bachelor's theses:

- 2008-2015 Altogether 7 theses supervised

9. MERITS IN TEACHING AND PEDAGOGICAL COMPETENCE

PEDAGOGICAL TRAINING

- 2015 Aalto University Pedagogical Training I (25 ECTS)

INVOLVEMENT IN THE IMPLEMENTATION OF COURSES

- 2015- Responsible teacher for Water and people in a changing world –course (5 ECTS)
2013 Responsible teacher for Global Water Problems –course (5 ECTS)
2005-2015 Various visiting lectures in the following courses at Aalto University: State of the World and Development; Global Water Problems; Vesitalouden perusteet; City in Crisis II
2007 & 2009 Part of the organisation committee of the Global Water Problems –course (5 ECTS)
2007 Tutor in Sustainable Global Technologies studio –course (10 ECTS)
2004-2005 Teacher and coordinator in several 1-3 day intensive courses and workshops on hydrological and hydrodynamic modelling for impact at the following universities: Institute of Technology of Cambodia, Rural University of Phnom Penh (Cambodia), National University of Laos, Khon Kaen University (Thailand), Can Tho University (Vietnam), HCMC University of Natural Sciences (Vietnam), HCMC University of Technology (Vietnam), Water Resources University (Vietnam)
1999-2000 Course assistant in 2 mathematics courses at the former Helsinki University of Technology

SUPERVISION OF THESES

See above, under Section 8

10. AWARDS, PRIZES AND HONOURS

- 2011 Winner of the best article award 2010 in Environmental Research Letters (impact factor: 3.91) with Kummur et al. 2010. ERL 5: 034006 (citations in Web of Science: 45)
2009 Best doctoral thesis award 2008 from Oskari Vilamo foundation (award for best DSc thesis in Civil engineering in Finland)

11. SCIENTIFIC AND SOCIAL MERITS

EVALUATION OF FUNDING APPLICATIONS

- 2014 & 2015 Evaluator for the Netherlands Organisation for Scientific Research (NWO) grant application
2012 Evaluator for The Leverhulme Trust (UK) grant application
2008 Evaluator for National Geographic Society (USA) grant application

PROFESSIONAL MEMBERSHIPS AND POSITIONS OF TRUST

- 2009- Member of the Finnish Association for Hydrology
2008-2010 Board member of WaterFinns NGO (member since 2003)
2003- Member of the International Water History Association (IWHA)

SERVICES OF PROFESSIONAL EXPERTISE

- 2014-2016 Member of Finnish Publication Forum (*Julkaisufoorumi*) panel 5 'Geosciences and environmental sciences'
10/2013 Invited presentation at 'Väestön kasvu ja väestöpolitiikka -luentosarja'
01/2013 Invited presentation at 'Tieteen päivät 2013' (Science days 2013)
03/2012 Invited expert hearing in Foreign Affairs Committee of the Parliament of Finland
09/2010 Invited expert presentation in Finnish water protection days

REFeree FOR SCIENTIFIC AND SCHOLARLY JOURNALS (frequency: ca. 3-5 requests per month)

Ambio, Boreal Environment, Climatic Change, Ecohydrology, Environmental Management, Environmental Research Letters, Geophysical Research Letters, Geoscientific Model Development, Global and Planetary Change, Global Environmental Change, Hydrology and Earth Systems Sciences, Hydrological Processes, International Journal of Water Resources Development, Journal of Environmental Management, Journal of River Basin Management, Journal of Water Resources Planning and Management, Landscape Ecology, Natural Hazards, Physical Geography, PLoS ONE, Quaternary International, Science, Water, Water Resources Management, Water Resources Research

INVITED LECTURES ABROAD

EFEO (École française d'Extrême-Orient) Cambodia, ETH Zurich (2), National University of Singapore (2), UNESCO-IHE Delft, University of Southampton, University of Wageningen, University of Zurich, UPMC Paris, VU University Amsterdam

INTERNATIONAL CONFERENCE AND WORKSHOP ORGANISING

- 05/2007 **Co-organiser:** Mekong at the Crossroads, Chiang Mai, Thailand (60 participants)
02/2006 **Main organiser:** Modern myths of the Mekong, Vientiane, Lao PDR (40 participants)
02/2005 **Co-organiser:** Integrated water resources management on the Tonle Sap Lake, Phnom Penh, Cambodia (30 participants)

12. SCIENTIFIC AND SOCIETAL IMPACT OF RESEARCH

NUMBER OF PUBLICATIONS (as of Mar 3rd 2016)

Scientific publ. **146** of which **87** are peer-reviewed (see table below for details)

	TOTAL	Of which journal articles
A. Peer-reviewed scientific articles	87	69
B. Non-refereed scientific articles	33	10
C. Scientific books		
- edited books	2	
- edited journal special issues	2	
D. Publications intended for	19	
E. Publications intended for general public	-	
F. Public artistic and design activities	1	
G. Academic thesis and dissertations	2	
	146	72

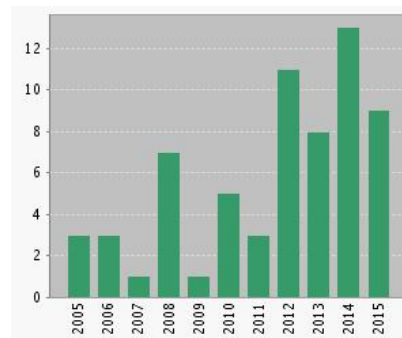


Figure 1. Number of published items (according to Web of Science)

TEN MOST IMPORTANT PUBLICATIONS (all publications are provided in the linked 'Publication list')

- Gerten G, Hoff H, Rockström J, Jägermeyr J, **Kummu M**, and Pastor A. 2013. Towards a bottom-up planetary boundary for freshwater. *Current Opinion in Environmental Sustainability* 5: 551-558.
- Jalava M, **Kummu M**, Porkka M, Siebert S, Varis O. 2014. Diet change – a solution to reduce water use? *Environmental Research Letters* 9: 074016.
- Kummu M**, Gerten D, Heinke J, Konzmann M, and Varis O. 2014. Climate-driven interannual variability of water scarcity in food production: a global analysis. *Hydrology and Earth System Sciences* 18: 447-461.
- Kummu M** et al. 2012. Lost food, wasted resources: global food supply chain losses and their impacts on freshwater, cropland, and fertiliser use. *Science of the Total Environment* 438: 477-489.
- Kummu M** and Varis O 2011. The World by latitudes: a global analysis of human population, development level and environment across the north-south axis over the past half century. *Applied geography* 31(2): 495-507.
- Kummu M**, Lu XX, Wang JJ and Varis O. 2010. Basin-wide sediment trapping efficiency of emerging reservoirs along the Mekong. *Geomorphology* 119: 181-197.
- Kummu M**, Ward PJ, de Moel H, Varis O. 2010. Is physical water scarcity a new phenomenon? Global assessment of water shortage over the last two millennia. *Environmental Research Letters* 5: 034006.
- Porkka M, **Kummu M**, Siebert S and Varis O. 2013. From food insufficiency towards trade dependency: A historical analysis of global food availability. *PLoS One* 8(12): e82714.
- Siebert S, **Kummu M**, Porkka M, Döll P, Ramankutty N, and Scanlon BR. 2015. A global dataset of the extent of irrigated land from 1900 to 2005. *Hydrology and Earth System Sciences* 19: 1521-1545.
- Ward, PJ, Jongman B, **Kummu M**, et al. Strong influence of El Niño Southern Oscillation on flood risk around the world. *Proceedings of the National Academy of Sciences – PNAS* 111: 15659-15664.

CITATIONS (as of Mar 3rd 2016)

	Published items	Citations	h-index
Web of science (WoS) ¹	64	975	17
Scopus ²	69	1116	19
Google Scholar ³	143	1992	24

¹ www.researcherid.com/rid/C-4797-2011

² goo.gl/B19Ke

³ goo.gl/hZF14

Number of co-authors in journal articles (according to Scopus): 126

PUBLIC AWARENESS PROJECTS

- 2012 Ta-daa dataa! Helsinki World Design Capital 2012 data visualisation campaign; openhelsinki.fi
- 2011 Wonderwater Café at Tian Hai, Beijing. Part of water footprint project; www.wonderwater.fi
- 2009 www.dropler.org –project together with AKVA (association of water students)
- 2008 Kun kylä kelluu –photo exhibition with M. Käkönen and M. Keskinen
- 2008 www.waterclock.org –project together with AKVA
- 2007 www.vesijalanjalki.org –project together with AKVA

MERITS IN SCIENCE COMMUNICATION AND EXPERT ASSIGNMENTS IN THE MEDIA

- 3 times interviewed by national and international radio
- over 20 interviews by print media, both national and international
- regular tweets [@MattiKummu](https://twitter.com/MattiKummu)

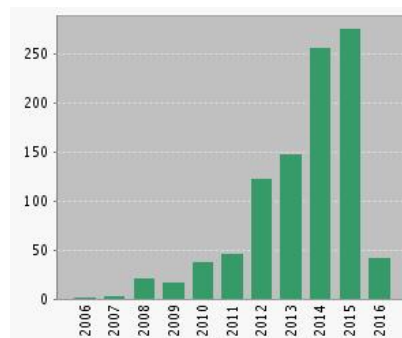


Figure 2. Number of citations (WoS)