



# Water and Development Research Group

WDRG is a multi- and interdisciplinary research group, working rigorously on various aspects of water. Our research themes vary from “water for food” to the “role of power and politics in water management”. WDRG has a strong modeling knowledge on big data and spatial analysis from local to global scale.

## Publications

- Porkka, M., Virkki, V., ....., Kummu, M. et al. (2024). **Notable shifts beyond pre-industrial streamflow and soil moisture conditions transgress the planetary boundary for freshwater change.** *Nature Water* 2, 262–273 .
- Hyvärinen, A., Keskinen, M. (2024). **Intermediaries as drivers of innovation development in resource-constrained environments: Insights from the Kenyan water sector.** *Technovation*, 131, 102956.
- Perttola, W. , Kallio, M. (2024). **Catch ‘em When the Water is Low: Longue Durée Hypothesis on Floodplains Fishing and its Rhythm in the Palembang and Jambi Region of Sumatra.** *International Journal of Nautical Archaeology*, 1–21.
- Gu, W., ....., Kummu, M. (2024) et al. **The asymmetric impacts of international agricultural trade on water use scarcity, inequality and inequity.** *Nature Water* 2, 324–336.
- Sandström, V, ....., Kummu, M. (2024). **Dependency on imported agricultural inputs—global trade patterns and recent trends.** *Environ. Res.: Food Syst.* 1
- Zhao, D., ....., Keskinen, M., ....., Varis, O. et al. (2024). **Water consumption and biodiversity: Responses to global emergency events.** *Science Bulletin*
- Xia, Q., ....., Zhao, D., ....., Varis, O. et al. (2024). **Effects of new-type urbanization on resource pressure: Evidence from a water-energy-food system perspective in China.** *Sustainable Cities and Society*.
- Keys, P.W., ....., Varis, O. (2024) et al. **The dry sky: future scenarios for humanity's modification of the atmospheric water cycle.** *Global Sustainability* 7, e11, 1–13.
- Maes, S.L., ....., Kummu, M., ....., Jalava, M. et al. (2024). **Environmental drivers of increased ecosystem respiration in a warming tundra.** *Nature* 629, 105–113

## Publications

- Mehta, P., ....., Kummu, M. et al. (2024). **Half of twenty-first century global irrigation expansion has been in water-stressed regions.** *Nature Water* 2, 254–261

## News

- **OPEN POSITIONS IN WDRG & Water and Environmental Engineering Research Group**  
Our group is currently searching for both new Doctoral Researchers and Postdocs: please contact Associate Professor **Marko Keskinen** or check [here](#).
- **Michael O’Connell**, doctoral researcher at Chalmers University of Technology, visited WDRG during 11-15 March for the research collaboration in engineering education. Together with doctoral researchers Xiaoqi Feng and Julia Sundman, they conducted research interviews with Aalto faculty members. Additionally, Michael delivered a presentation on social regulation of learning in interdisciplinary education on 14th March in the seminar.
- Associate Professor **Matti Kummu** was presented with **Impact Award** for his excellence in communicating his research findings to both specialist and non-expert audiences. Read more [here](#).





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## Conferences

- EGU24, Vienna, 14-19 April 2024
  - Distinguished Professor **Olli Varis**: Typology of world’s river basins regarding socio-ecological resilience to ten major water related risks.
  - Doctoral Researcher **Anup Shrestha**: Bridging gaps, saving lives: Integrating communities’ voices in advancing flood early warning system in developing countries
  - Doctoral Researcher **Vili Virkki**: Statistical analysis of global river streamflow regime changes and their alignment with trends in human drivers

## Master’s thesis students under supervision of Associate Professor Matti Kummu



**Bhattarabhop Viriyaraj** (“Best”) is working on Global Food System Archetypes that can promote sustainable intensification of food crops. His background is in Civil Engineering and Hydraulics Engineering.



**Camila Gallo**, a master's thesis student, is analyzing the potential to increase food production through a shift in land use from cash crop cultivation to food crop cultivation. Her academic background is in geography and geoinformation.



**Pihla Seppälä**, WAT Master’s student with background in energy and environmental engineering, started as a Master’s thesis worker. The thesis is a global research about co-occurrence of different drought types.



**Mohamud Zaahid**, WAT Master’s student, is conducting his thesis to analyze Somalia's complex floods co-occurrences and crucial indicators. His thesis contributes to the knowledge and development of sustainable flood management strategies in areas exposed to climate variability and environmental change.



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## Events

- A communication workshop by Communication Puuha and Aalto Ventures Program was held on 18th April. The workshop focused on blog writing, pitching and social media. One of the participant expressed that *“the workshop was insightful, especially the tips on how to write better blogs such as subtitles and blockquotes. The opportunity to do an elevator pitch for the thesis that is also valuable since I've been struggling to explain my thesis in short words.”*
- Academic Coordinator **Maija Taka** and Doctoral Researchers **Hanna Aarnio**, **Xiaoqi Feng**, and **Julia Sundman** organized an Engineering Education Symposium on April 29. The event facilitated discussions on how to strengthen collaboration and share best practices around engineering education research at Aalto. The keynotes were delivered by Distinguished Professor **Olli Varis** and Professor **Lauri Malmi**.

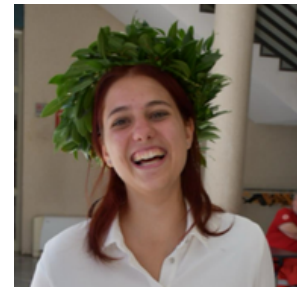
## People



**Tiia Westerberg**, a second year WAT master's student, has started working on her thesis in the WAT research group under the supervision of Associate Professor **Marko Keskinen**. Her thesis is related to knowledge use in water resource management in the context of Finland. Her general interest in nature conservation has lead to learning more about the issues and matters of governance, stakeholder engagement, and their possible linkages to successful conservation.



**Wenli Lin**, a second-year WAT master's student, is currently working on her master's thesis on global water risk under supervision of Associate Professor **Matti Kummu**. Her research interest lies in the global water risks and challenges brought about by the increasing frequency of extreme weather events.



**Emanuela De Giorgi** is an exchange student working on her master thesis under the supervision of Associate Professor **Matti Kummu**. The study focuses on the analysis of conservative agricultural techniques and their productivity. Her background is in Environmental and Landform Engineering.

**Next newsletter in September!**