

Publications regarding spatiotemporal management and virtual energy storage in renewable energy production systems

1. Wörman, A., Bertacchi Uvo, C., Brandimarte, L., Busse, S., Crochemore, L., Girons Lopez, M., Hao, S., Pechlivanidis, I., Riml, J., 2020. Virtual energy storage-gain resulting from the spatiotemporal coordination of hydropower over Europe. Applied Energy, Vol. 272, Article number 115249, doi.org/10.1016/j.apenergy.2020.115249
2. Wörman, A., Pechlivanidis, I., Mewes, D., Riml, J., Bertacchi Uvo, C., 2024. Spatiotemporal management of solar, wind and hydropower across continental Europe, Nature Commun Eng 3, 3 (2024). <https://doi.org/10.1038/s44172-023-00155-3>. <https://rdcu.be/dvcND>

Included in Nature Collection: “[Energy Infrastructure, Renewables Integration, and Smart Grids](https://www.nature.com/collections/ecajjgbcge)” under the section for “Grid Management and Resilience” (<https://www.nature.com/collections/ecajjgbcge>)

Blog post “[Behind the Paper](#)”

(<https://communities.springernature.com/posts/spatiotemporal-management-of-solar-windand-hydropower-across-continental-europe>)

3. Jing Hu, Yu Li, Anders Wörman, Bingyao Zhang, Wei Ding, Huicheng Zhou, 2023. Reducing energy storage demand by spatial-temporal coordination of multienergy systems, Applied Energy, 329:120277, <https://doi.org/10.1016/j.apenergy.2022.120277>
4. Hao, S., Wörman, A. & Brandimarte, L. The impact of hydroclimate-driven periodic runoff on hydropower production and management. Sci Rep 14, 25967 (2024). <https://doi.org/10.1038/s41598-024-76461-3>
5. Palm, S, 2025. **Managing Renewable Energy Production across the African-European continents, Master degree report**, KTH – The Royal Institute of Technology, Stockholm, Sweden. School of Architecture and the Built Environment (ABE), Sustainable development, Environmental science and Engineering. <https://kth.diva-portal.org/smash/get/diva2:1949027/FULLTEXT01.pdf>