

EGU21-13186

<https://doi.org/10.5194/egusphere-egu21-13186>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## Hydrological modelling and anthropogenic water use

**Ponnambalam Rameshwaran**, Ali Rudd, Vicky Bell, Matt Brown, Helen Davies, Alison Kay, and Catherine Sefton

UK Centre for Ecology & Hydrology, Wallingford, United Kingdom (ponr@ceh.ac.uk)

Despite Britain's often-rainy maritime climate, anthropogenic water demands have a significant impact on river flows, particularly during dry summers. In future years, projected population growth and climate change are likely to increase the demand for water and lead to greater pressures on available freshwater resources.

Across England, abstraction (from groundwater, surface water or tidal sources) and discharge data along with 'Hands off Flow' conditions are available for thousands of individual locations; each with a licence for use, an amount, an indication of when abstraction can take place, and the actual amount of water abstracted (generally less than the licence amount). Here we demonstrate how these data can be used in combination to incorporate anthropogenic artificial influences into a grid-based hydrological model. Model simulations of both high and low river flows are generally improved when abstractions and discharges are included, though for some catchments model performance decreases. The new approach provides a methodological baseline for further work investigating the impact of anthropogenic water use and projected climate change on future river flows.