

EGU2020-11759

<https://doi.org/10.5194/egusphere-egu2020-11759>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Water Quality Mixing Model (WQMM) for Environmental Flow Release Monitoring

**Gabriel Sentlinger**

Fathom Scientific Ltd., R&D, Bowen Island, Canada (gsentlin@telus.net)

Environmental Flow Release monitoring can be an expensive undertaking in active watercourses normally suitable for run-of-river hydropower projects. In order to attain acceptable (<10%) uncertainty in the derived flow series, it is necessary for a Qualified Professional (QP) to make several site visits to measure a range of flows in order to calibrate a stage-discharge (rating) curve. With climate change, the need to measure drought conditions and respond appropriately is crucial for habitat health and to prevent fish stranding. The current study employs a Water Quality Mixing Model (WQMM) to estimate flows at a downstream site from an existing hydropower plant using a modified constant rate mixing model. This is an independent estimate of flow entirely distinct from the stage-discharge curve. The method can be employed anywhere there is a sufficient mixing length and sufficiently distinct WQ traits. The method can reduce both maintenance costs and flow uncertainty where Environmental Flow Release Monitoring is required.