

EGU2020-19661

<https://doi.org/10.5194/egusphere-egu2020-19661>

EGU General Assembly 2020

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



Climate elasticity of low-flows: the long-term impact of droughts

Vazken Andréassian¹ and Alban de Lavenne²

¹Université Paris-Saclay, INRAE, UR HYCAR, 92761 Antony, France (vazken.andreassian@irstea.fr)

²SMHI, Norrköping, Sweden

The long-term memory of catchments (carried by their hydrogeological characteristics) has a considerable impact on low-flow dynamics. Here, we present an exploratory study on a large French dataset to characterize the climate elasticity of low-flows and understand its long-term dependency. The climate elasticity of catchments is a simple concept (almost model-free) that allows analyzing the linear dependency of streamflow anomalies to climate anomalies (Andréassian et al., 2016). Widely-used for average annual streamflow, we propose to extend this concept to annual minimum monthly flow anomalies (QMNA) in order to characterize the climate dependency of QMNAs. By introducing progressively the linear dependency to the climatic anomalies of previous years, we further characterize the long-term memory of low-flows for the catchments of our set.

References

Andréassian, V., Coron, L., Lerat, J., and Le Moine, N. 2016. Climate elasticity of streamflow revisited – an elasticity index based on long-term hydrometeorological records, *Hydrol. Earth Syst. Sci.*, 20, 4503-4524.