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HydroZIP: using hydrological knowledge to compress hydrological data

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From (algorithmic) information theory it is known that there is an analogy between compression, knowledge and prediction. The more we know about a data generating process, the better we can predict and compress the data. In theory, this means that hydrological knowledge could be incorporated into compression algorithms to more efficiently compress hydrological data and to outperform general purpose compression algorithms.
In this research, we present such a hydrological data compressor, HydroZIP, and test in practice whether it can outperform general purpose compression algorithms on hydrological data. The results are discussed to illustrate points related to learning from data, overfitting and model complexity.