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Tools to develop environmental flow guidelines in an uncertain future hydrological context

André St-Hilaire¹, Laureline Berthot¹, Habiba Ferchichi¹, and Daniel Caissie²

¹INRS, Centre Eau terre environnement, Canada (andre.st-hilaire@inrs.ca)

²Fisheries and Oceans Canada

Environmental flows (eflows) refer to the amount of water required to sustain aquatic ecosystems. In its formal definition, three flow characteristics are listed that need to be minimally maintained: quantity, timing and quality. Some of the current tools used for eflow determination in the context of an evolving climate are based on hydrological metrics. Some of the potential caveats associated with their usage are caused by the fact that flow time series are increasingly non-stationarity. Timing of low flow events will also likely change within a season, but will also likely shift in seasonality in some regions. Flow quality is a multi-faceted concept. It is proposed that a first simple step to partly incorporate flow quality in future analyses is to include water temperature as a covariate. An example of this combination of flow and temperature is provided for Eastern Canada.