

EGU22-3938

<https://doi.org/10.5194/egusphere-egu22-3938>

EGU General Assembly 2022

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Possible approach to setting lower discharge limits for the characterization of hydrological drought

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The monitoring of hydrological drought is an important part of surface water monitoring and assessment provided by the Slovak Hydrometeorological Institute. The methodology of the on-line evaluation of the mean monthly discharges in selected water-gauging stations (WS) is actually based on selected quantiles of the mean long-term monthly discharges ($Q_{ma,1961-2000}$). However it turns out that in the lowest category ($\leq 20\% Q_{ma}$) the occurrence of mean monthly and daily discharges lower than this limit significantly varies among the stations in different regions of Slovakia and/or different regime types and sizes of the rivers. Therefore, in this article, we have focused on the evaluation of the extent of the occurrence of mean monthly and daily discharges bellow selected limits in the reference period 1961-2000 as well as in the period 2001-2020. The results confirmed that the lowest limit $20\%Q_{ma}$ (as a limit for extreme hydrological drought) is too low for large part of evaluated WS or at least for part of the months of the year. The extent of months and days bellow selected limits significantly differ also in the period 2001-2020 comparing with the reference period.