81ˢᵗ International Scientific
Conference of the
University of Latvia 2023

Contribution ID: **3**   Type: **Online oral presentation (12 min)**

Determination of hydrological drought by daily water level data

Friday, 10 March 2023 12:20 (15 minutes)

Climate change is becoming more and more visible, and the consequences are getting worse. Therefore, it is critical to quickly identify the threat and respond to it. Climate change is causing hydrological droughts, which have become very noticeable in recent years. In fact, in 2022, the runoff of many rivers in Europe reached minimum values. Most commonly used indices to identify hydrological droughts use discharge as input data, but in this paper, based on the example of Lithuania, water levels were tested to speed up the process. The Standardized Water Level Index (SWLI) was calculated in the same way as the Streamflow Drought Index (SDI), but the discharge data were replaced by the water level data. The warm period of the year, namely from May to October, and 10-day accumulation period were taken for the study. All calculations were made for 30 years (1991-2020). To compare the two indices, 15 Lithuanian catchments with an area from 148 km2 to 812,000 km2 were selected. The study revealed that small rivers had more significant deviations of negative values, which could be caused by the high amount of river flora in summer. Therefore, equations of determination were applied to define the threshold value of severe drought. The SWLI showed similar results to the SDI, except for a slightly higher number of days with severe drought. The hydrological drought was most often detected in May. According to both indices, the driest years were 1992, 2006 and 2019-2020. Thus, it was confirmed, that SWLI could be used to determine severe hydrological drought in Lithuanian rivers.

Primary authors: NAZARENKO, Serhii (Lithuanian Energy Institute); ŠARAUSKIENĖ, Diana (Lithuanian Energy Institute); KRIAUČIŪNIENĖ, Jūratė

Presenter: NAZARENKO, Serhii (Lithuanian Energy Institute)

Session Classification: Data and models