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Runoff regime after heavy rainfall events in view of changing climate in a beech stand at the LTER-CWN site "Klausenleopoldsdorf"

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The Austrian Research Infrastructure LTER-CWN (Long-Term Ecosystem Research Infrastructure for Carbon, Water and Nitrogen) aims for measuring extreme events in high temporal resolution. Within the framework of this project a measuring weir was installed near Klausen-Leopoldsdorf (Lower Austria) in order to collect high-resolution data of stream-water quantity and quality. The measuring weir is located in the western part of the „Wienerwald", the north-eastern edge of the Alps, at about 475m a.s.l. Especially in the year 2020 this area showed humid weather conditions with an annual precipitation of 904mm. The observed catchment has an area of about 46 hectares. The dominating soil types in the catchment are Planosoils and Stagnosols. The observations at the weir with a time resolution of 5 minutes started in February 2019. The plot was set up for recordings of carbon (C), nitrogen (N) and water fluxes theparameters TOC-N, DOC-N, $NO_{3,}$ water level, water temperature, electrical conductivity, turbidity and organic matter values being measured. To answer one of the main research issues - the impact of heavy rainfall events on the runoff regime of a catchment within a dense beech forest in relation to the soil, specific time, the influence of interception and corresponding water level in the observed river - a water level sensor (OTT) and a multifunction spectrolyzer (S:CAN) were installed at the weir. During the measuring period 2019/2020 11 heavy rainfall events (corresponding to more than 20mm daily precipitation sum) were recorded. Due to the small catchment area the average time interval between heavy rainfall events and the corresponding increase of the water level at the measuring weir is about 2 hours. The time and intensity of the rainfall event together with the level of soil moisture before the precipitation event are the key factors for the amount of runoff. Additionally, other measured parameters like the turbidity or the electrical conductivity of the water correspond very well with the amount of runoff. Data with such a high time resolution will help to get a better understanding of extreme events and the consequences of these events in respect to climate change.