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Analysis of floodplain forest sensitivity to drought

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Floodplain forests are very complex, productive ecosystems, capable of storing huge amounts of soil carbon. With the increasing occurrence of extreme events, they are today among the most threatened ecosystems. Our study's main goal was to assess the productivity of a floodplain forest located at Lanžhot in the Czech Republic from two perspectives: carbon uptake (using an eddy covariance method) and stem radius variations (using dendrometers). We aimed to determine which conditions allow for high ecosystem production and what role drought plays in reducing such production potential. Additionally, we were interested to determine the relative soil water content threshold indicating the onset and duration of this event. We hypothesized that summer drought in 2018 had the most significant negative effects on the overall annual carbon and water budgets. In contrast with our original hypothesis, we found that an exceptionally warm spring in 2018 caused a positive gross primary production (GPP) and evapotranspiration (ET) anomaly that consequently led in 2018 to the highest seasonal total GPP and ET from all of the investigated years (2015–2018). The results showed ring-porous species to be the most drought resistant. Relative soil water content threshold of approximately 0.45 was determined as indicating the onset of drought stress.