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Wind effects on the weighing lysimeters in Groß-Enzersdorf

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Lysimeters are tools to determine the components of the hydrological cycle. Weighing lysimeters provide the possibility to measure the changes of weight dS per time interval. Using the water balance equation, the evapotranspiration ET can be computed from weight changes, rainfall R and percolation water P (ET = R + I - P - dS). The lysimeter station with the agricultural-meteorological station in Groß-Enzersdorf provides the possibility to measure these parameters with a high temporal resolution. Precise measuring systems and automatic data storage allow short measuring intervals and give a more detailed view of the examined parameters.
However, the 15 minutes weighing data of the lysimeters in Groß-Enzersdorf show differences in adjacent values that cannot be interpreted as gain or loss of water. The weighing system operates as lever arm-counterweight principle. A load cell measures the weight change with a resolution of ± 0.06 mm water equivalent. Weighing data on a day with wind velocity values above 5 m/s were compared to an almost calm day. On the windy day, the data analysis delivered a standard deviation of ± 0.096 mm, which is larger than the weighing error. Further investigations were made to support these results.