

EGU25-21639, updated on 21 May 2025
<https://doi.org/10.5194/egusphere-egu25-21639>
EGU General Assembly 2025
© Author(s) 2025. This work is distributed under
the Creative Commons Attribution 4.0 License.



Measuring Evapotranspiration at Cabauw (The Netherlands)

Evert I. F. de Bruijn and Jessica M. I. Strickland

KNMI, The Netherlands

Droughts in the Netherlands have been exacerbated by climate change, urging better scientific understanding of the hydrological cycle. Moreover, reliable predictions and management rely on accurate water observations at the surface. To date, the Royal Netherlands Meteorological Institute (KNMI) primarily estimates evaporation based on the meteorological conditions such as precipitation and temperature. Meanwhile, the Cabauw Experimental Site for Atmospheric Research has maintained decades of in-situ evaporation observations, exploring a range of indirect in-situ methods. Nonetheless, to better understand how moisture leaves the surface, more direct methods are required. A new smart lysimeter has been deployed which measures the water inflow and outflow of a representative soil and vegetation column. We evaluate this direct method for measuring evapotranspiration and compare the performance to other established methods, such as the eddy covariance method. Lysimeter measurements, although precise, are spatially limited, sensitive to small-scale variations, and require rigorous validation. Therefore, we present the initial results of the validation and explore the lysimeter's potential as a reference standard for more accessible instruments that could broaden the scope of the evaporation observations network. Furthermore, by integrating supplementary in-situ measurements, our findings suggest that applying validated lysimeter data may lead to better closure of the surface energy balance. Looking towards the future, these results have the potential to advance hydrological research, inform models, as well as environmental decision-making.