

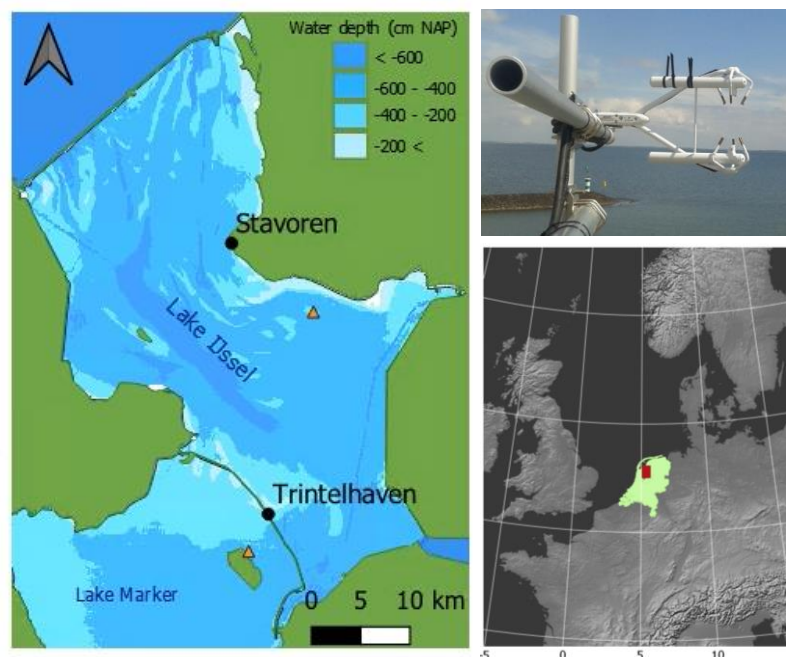
Evaporation from a large lowland reservoir – observed dynamics during a warm summer

Femke A. Jansen, Adriaan J. Teuling, Remko Uijlenhoet, Cor M.J. Jacobs, and Pieter Hazenberg

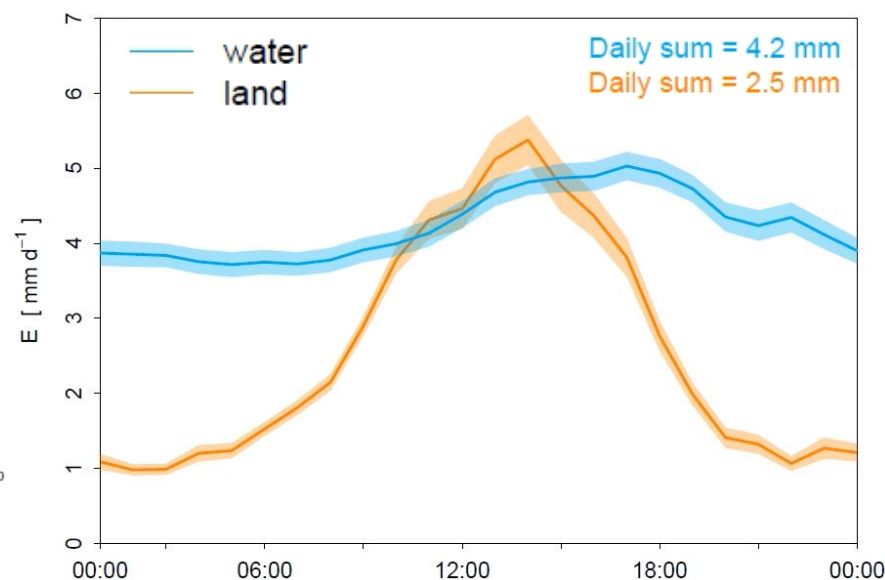


Long-term evaporation measurements of lake IJsselmeer in the Netherlands

- Eddy covariance
- Two locations



Summer season (2019 & 2020) - Stavoren

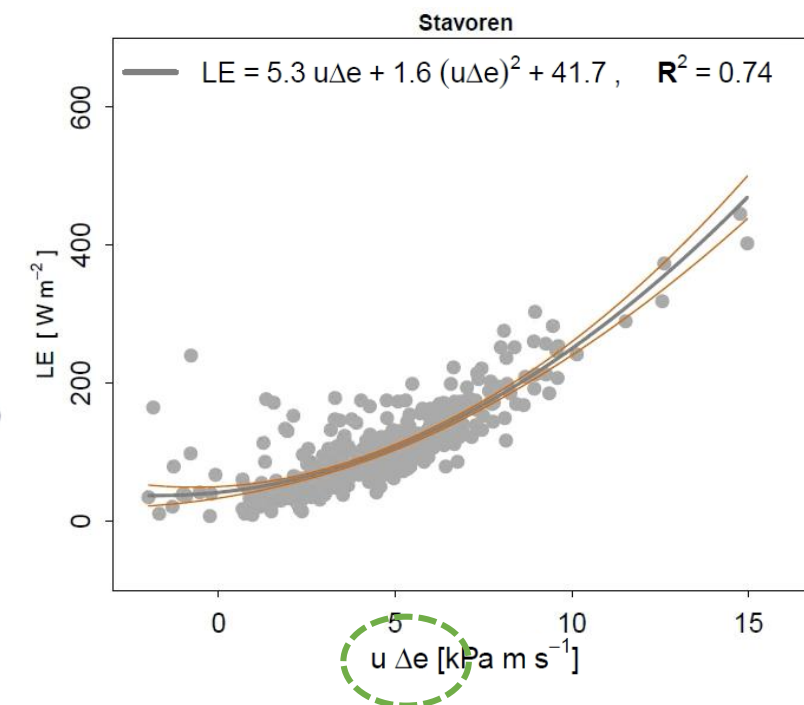


Energy balance is not preserved at the water surface of the lake

→ Different diurnal cycle compared to land

Explaining variables:

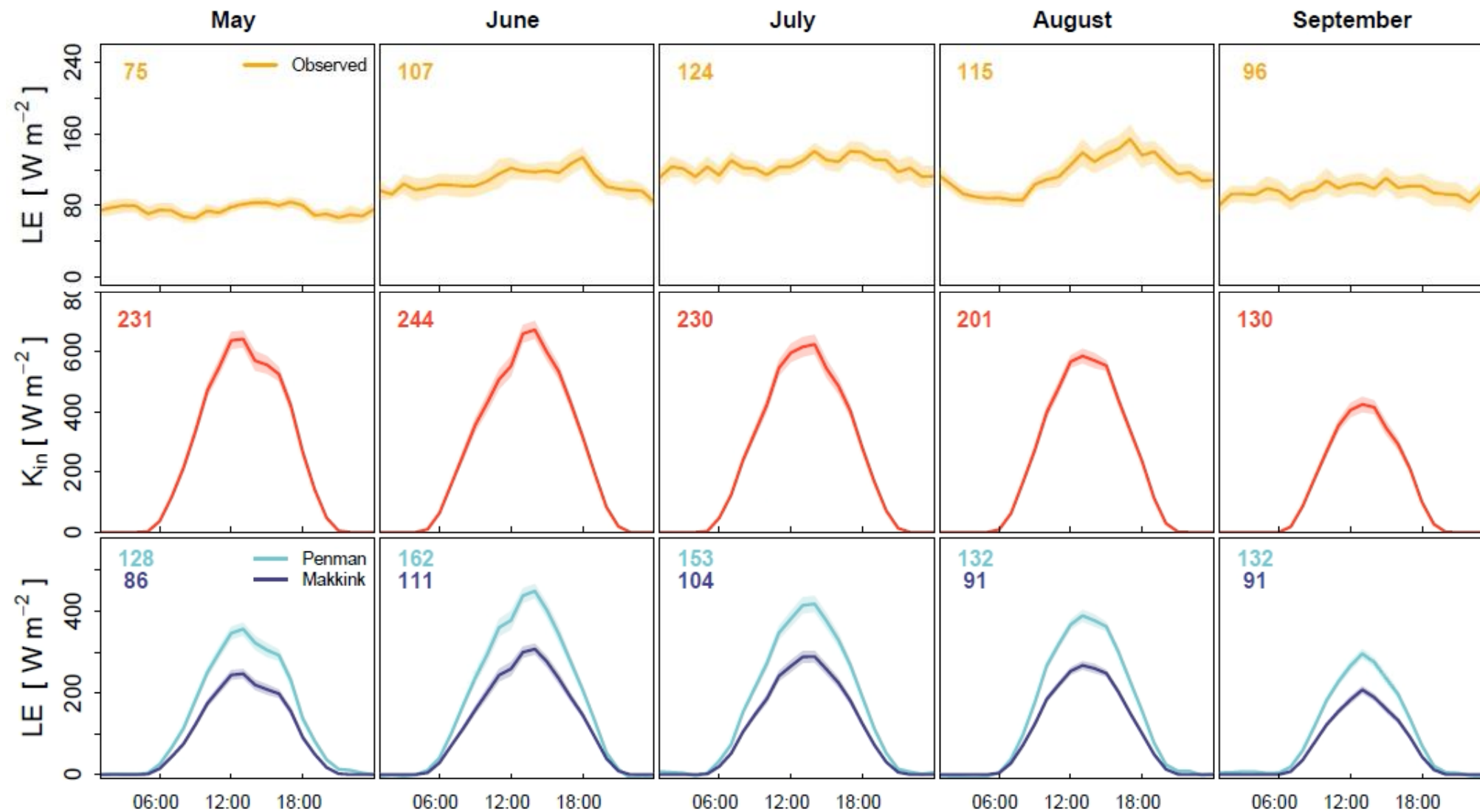
- Wind speed (u)
- vertical gradient of vapour pressure (Δe)



Display material

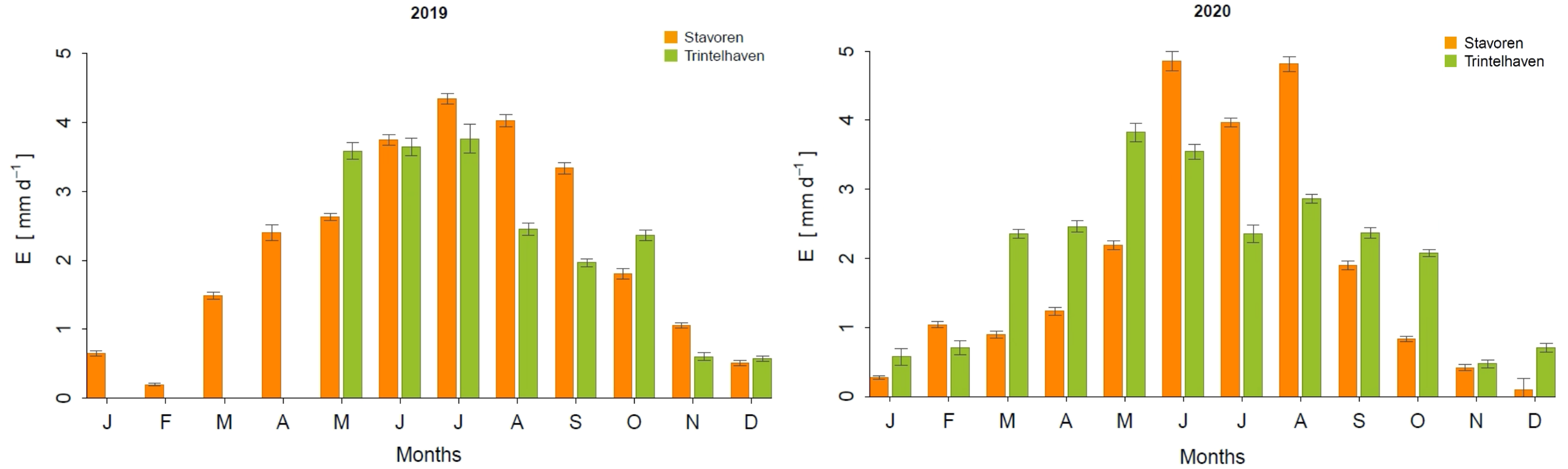


Global radiation does not explain the diurnal cycle of open water evaporation



Location: Stavoren
Period: summer 2019
Data: hourly resolution

Intra-annual variation shows there is a seasonal cycle

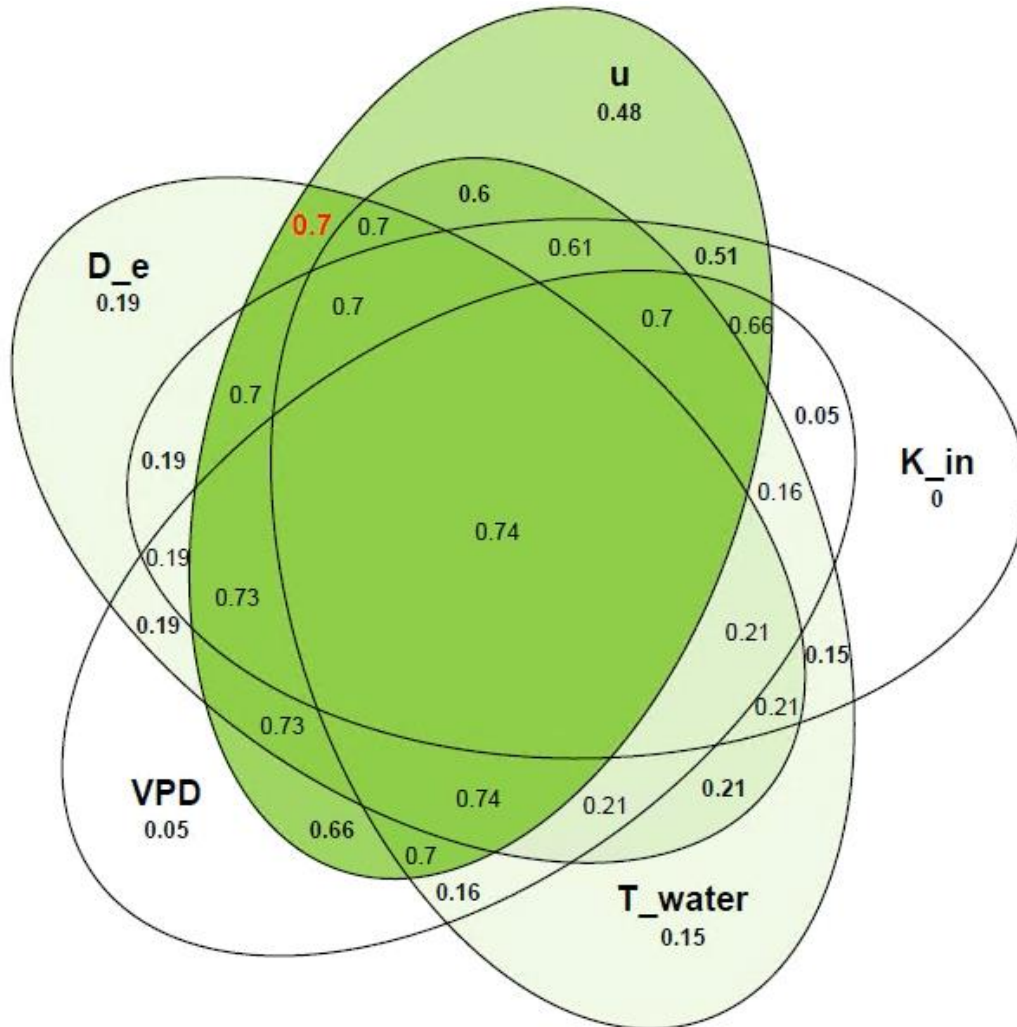


Location: Stavoren & Trintelhaven
Period: summer 2019 & 2020
Data: hourly resolution

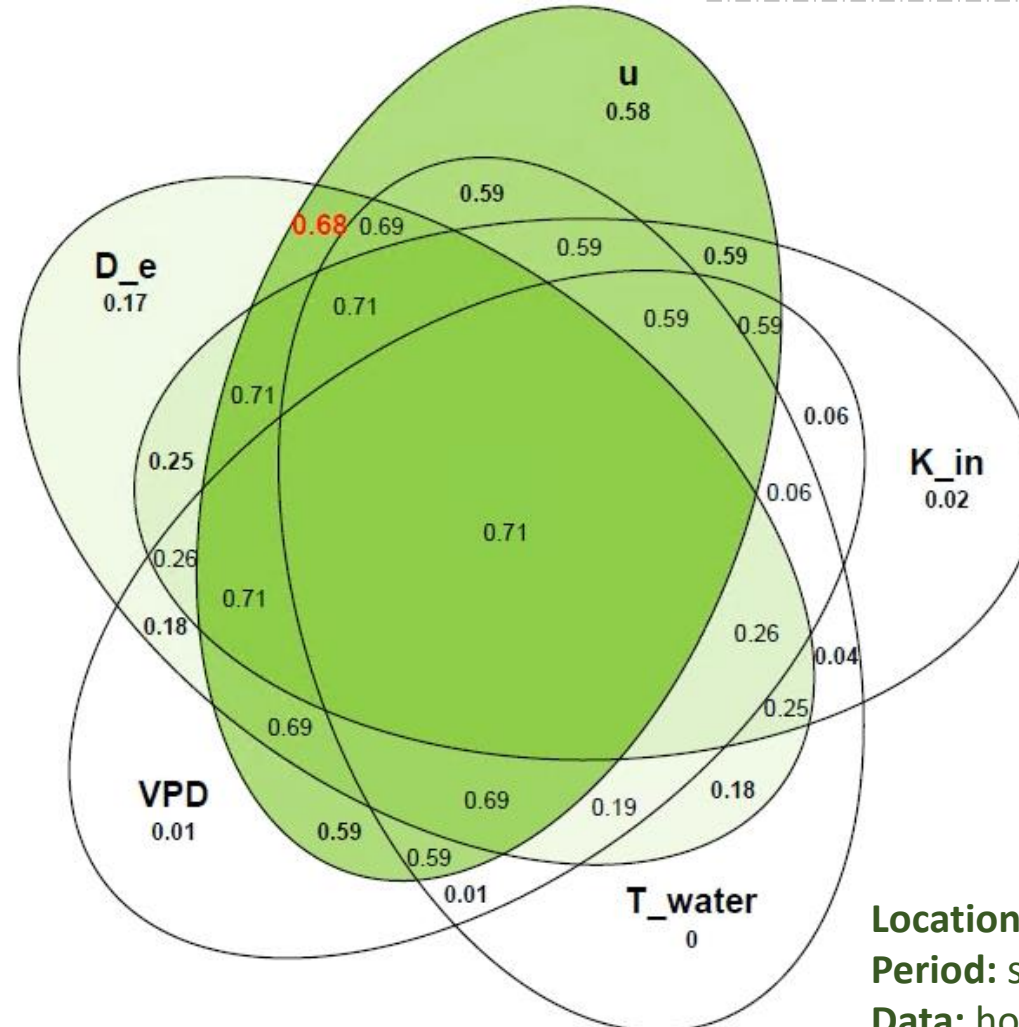
Regression analysis shows that wind speed explains the E_{water} dynamics for a large part

K_in	– global radiation
u	– wind speed
D_e	– vertical gradient of vapour pressure
VPD	– vapour pressure deficit
T_water	– water temperature

Stavoren

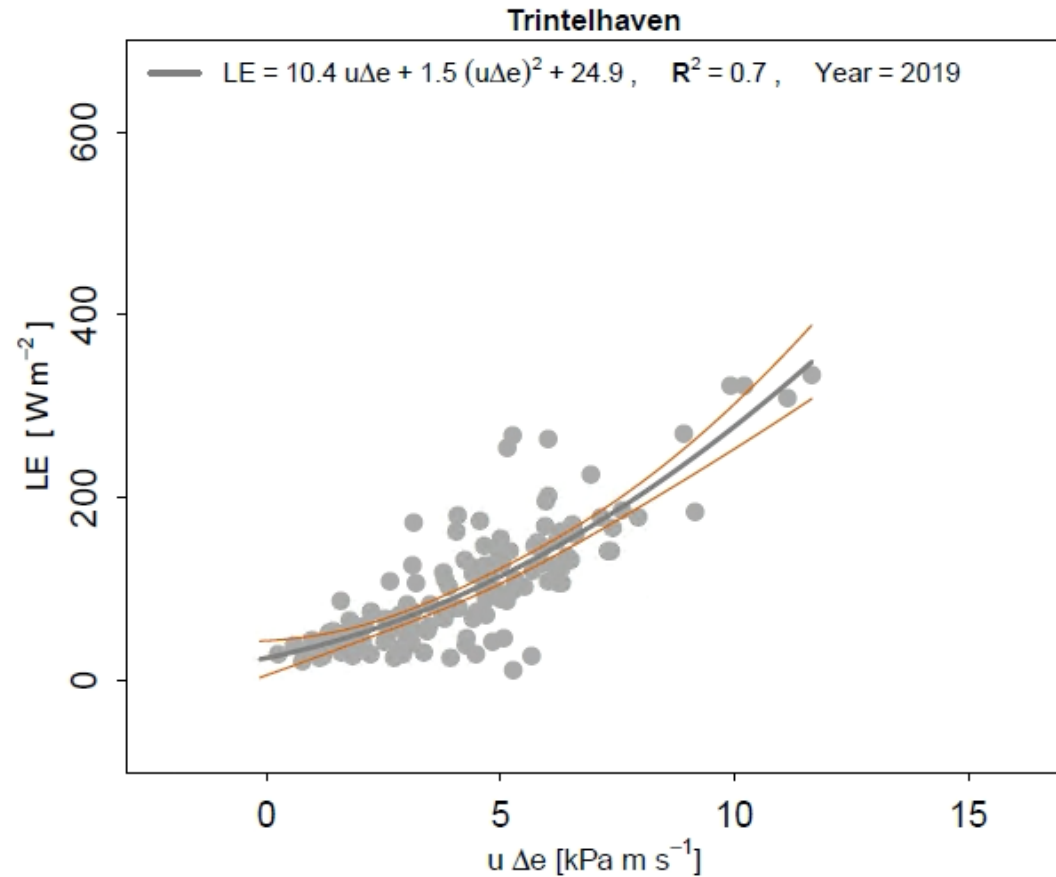
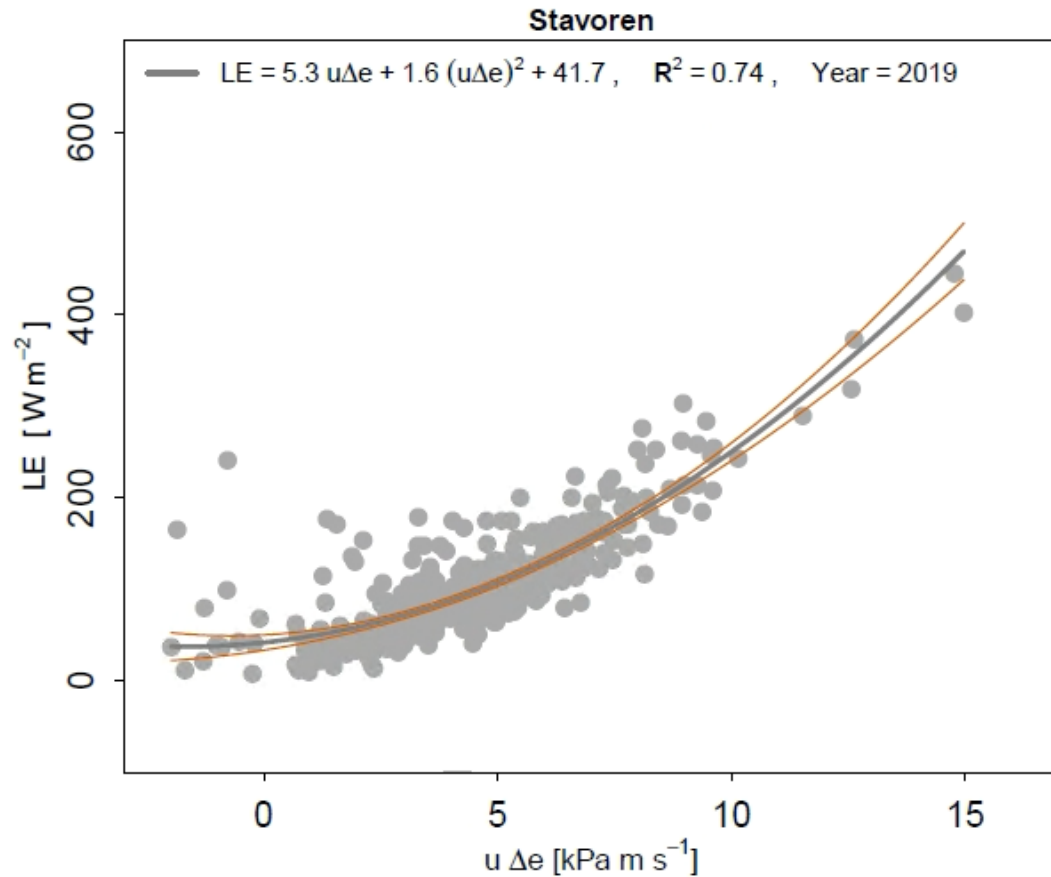


Trintelhaven



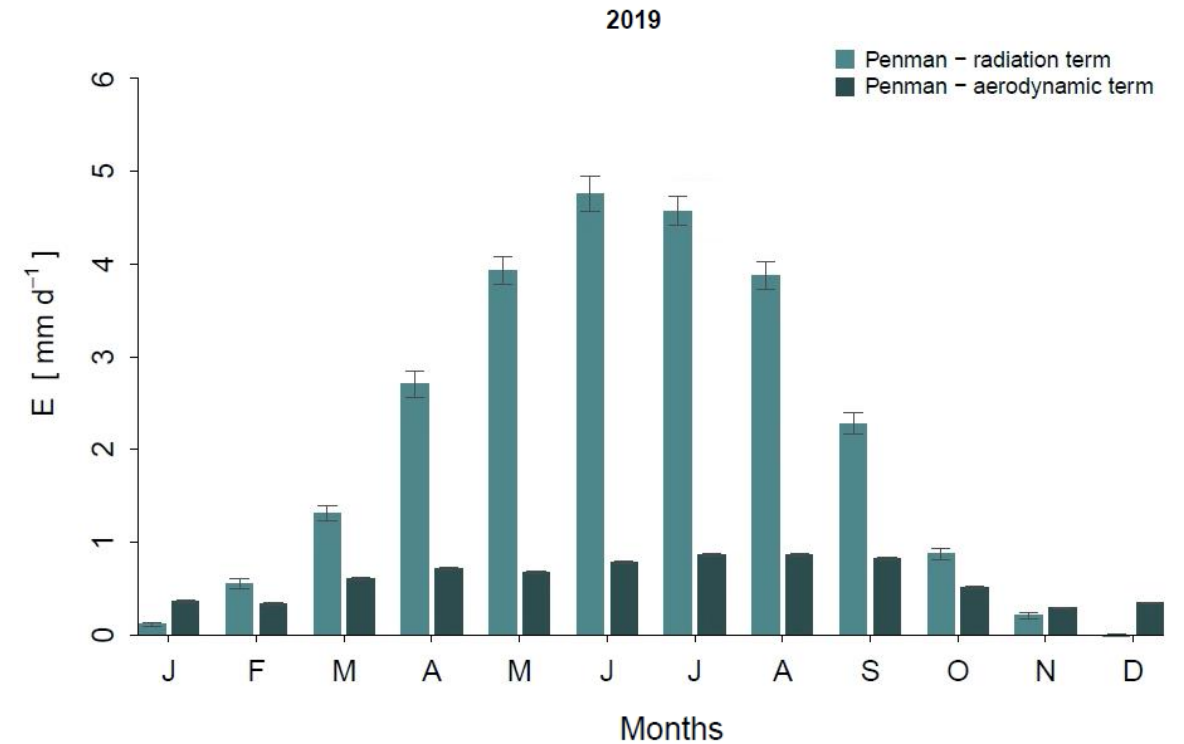
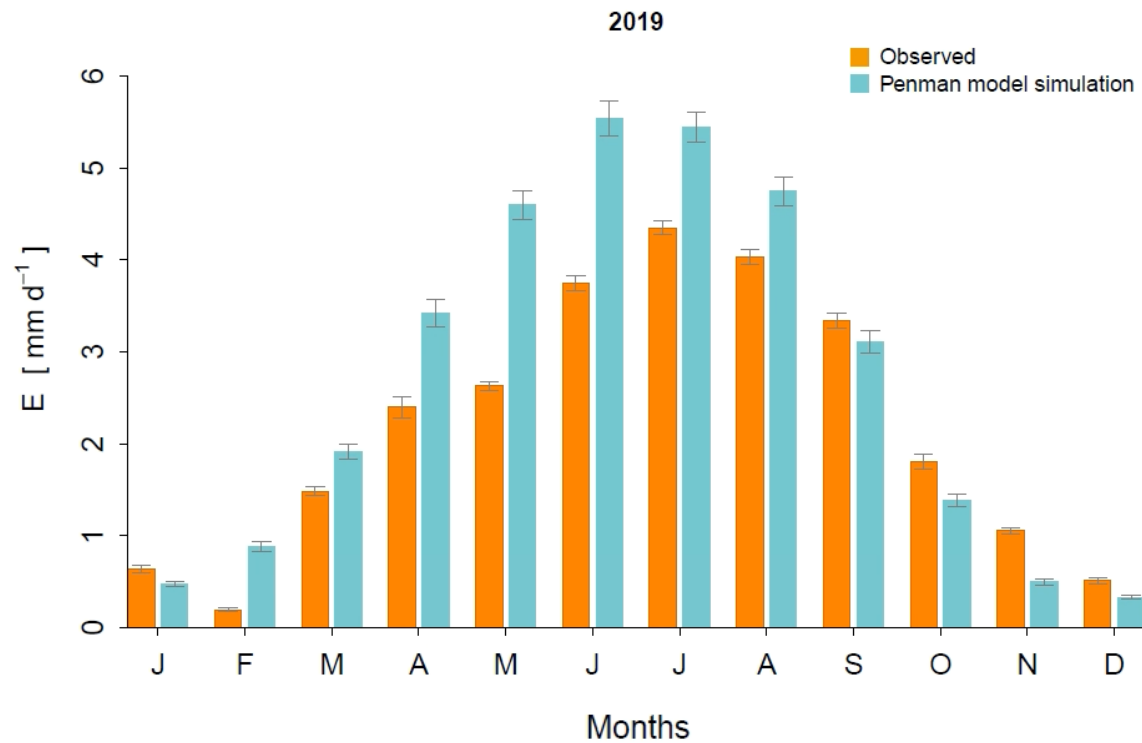
Location: Stavoren & Trintelhaven
Period: summer 2019 & 2020
Data: hourly resolution

Wind speed and vapour pressure gradient are the ingredients
needed to explain E_{water}



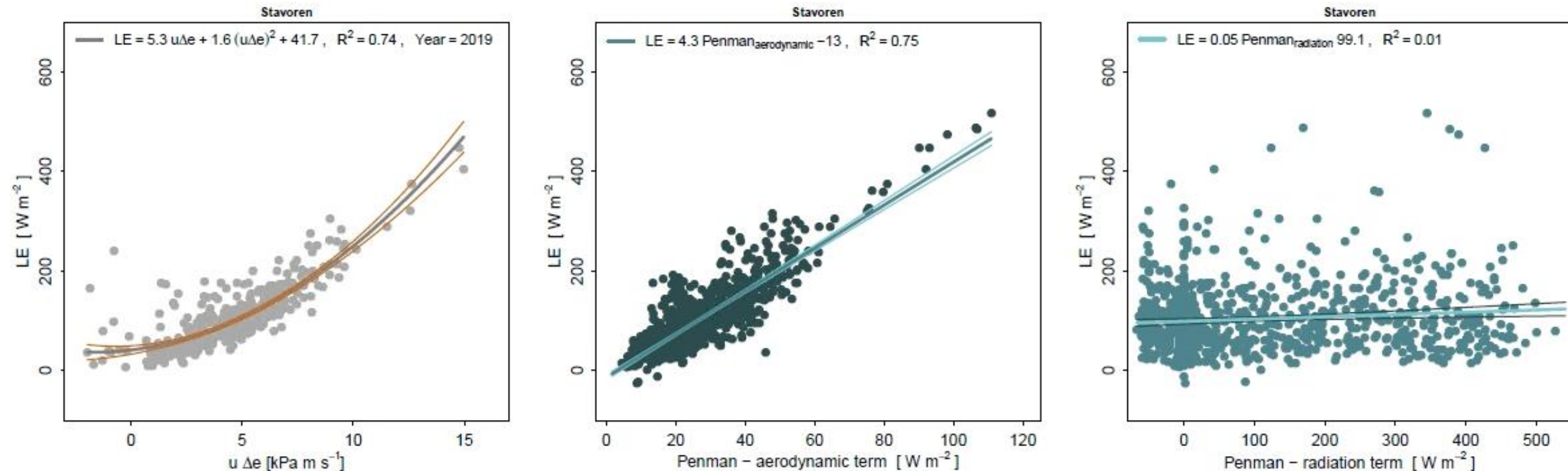
Location: Stavoren & Trintelhaven
Period: summer 2019
Data: hourly resolution

Intra-annual variation of E_{water} resembles the radiation component of Penman's model



Location: Stavoren
Period: 2019
Data: hourly resolution

Strong linear correlation between observed LE_{water} and the aerodynamic component of Penman's model, as opposed to the radiation term



Location: Stavoren
Period: summer 2019
Data: hourly resolution