Evapotranspiration of an irrigated vineyard

M. Le Page

Objectives

- Compare different methods for the retrieval of the basal crop coefficient of irrigated vineyards using optical remote sensing
- Take into account Thermal Infra Red view angle for evapotranspiration retrieval

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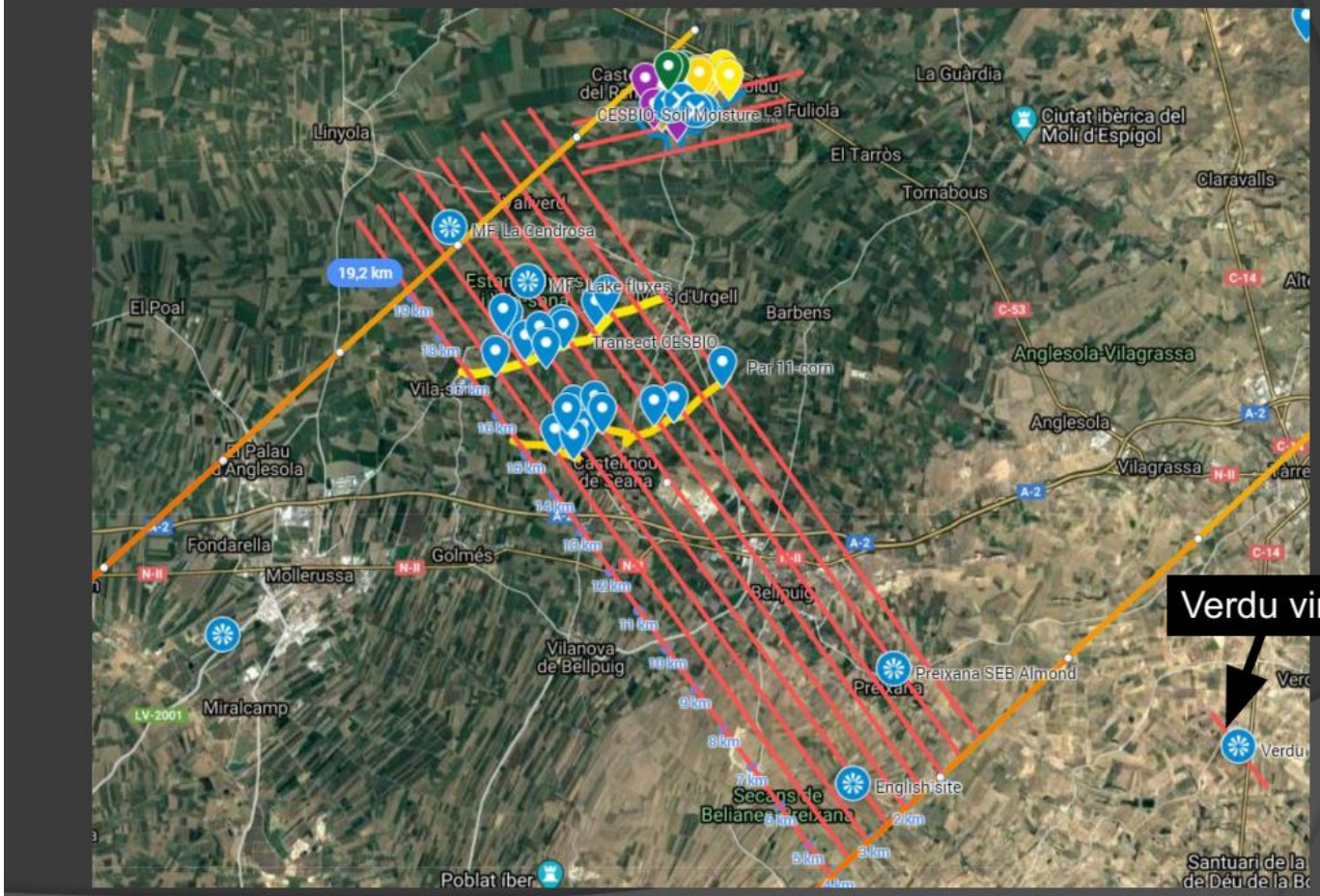
Experimental setup



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Experimental setup

- an EC system (H_20+C) + a « TIR » setup from 01/04 to 28/09

EC system IRT setup

- SSM monitoring of 10 plots at the Sentinel-1 dates from 12/04 to 27/07
- Complementary local measurements
  - Soil study
  - Technical itinerary
  - Semi-destructive LAI (once)
  - Vineyard geometry of 10 plots

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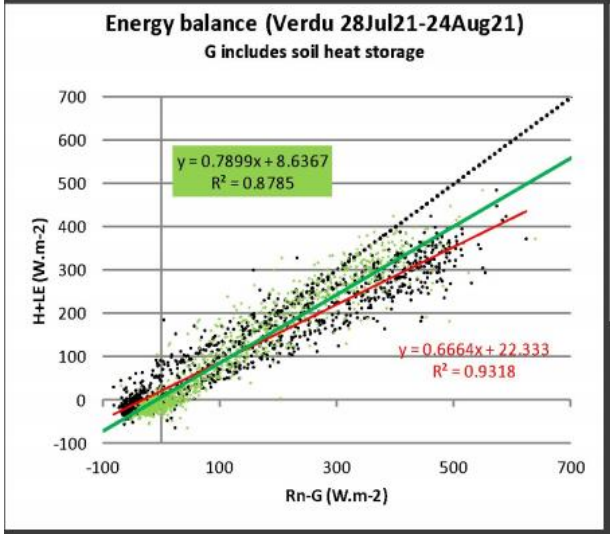
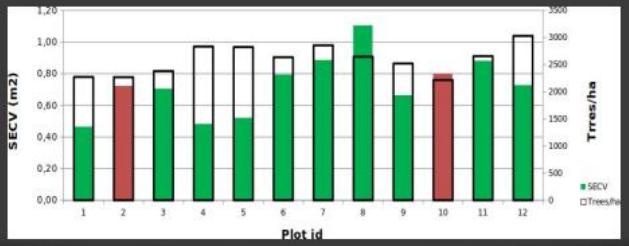
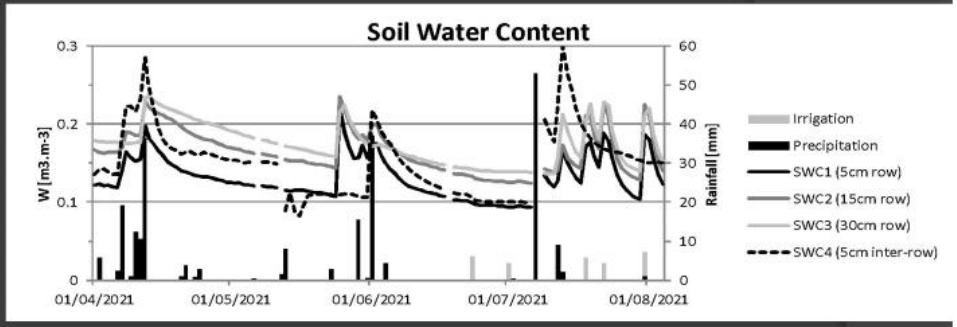
Data processing



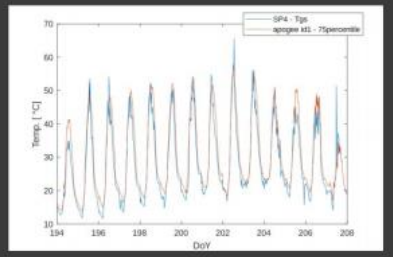
Energy balance between the 28 of July 2021 and 24 of August 2021. In Black (and red trend line), the raw energy balance. In green, the energy balance with a correction of the soil heat storage.

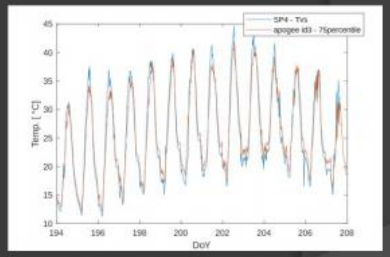


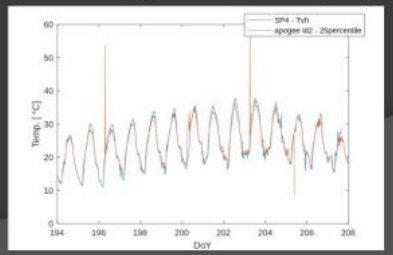
Variability of measured green exposed canopy and trees/hectare (27 of July 2021). Plots 10 and 2 in red correspond to the eddy-covariance station



Soil water content on the row (continuous lines) and inter-row (dashed line).







Comparison of Apogee and IRT cameras on three different positions

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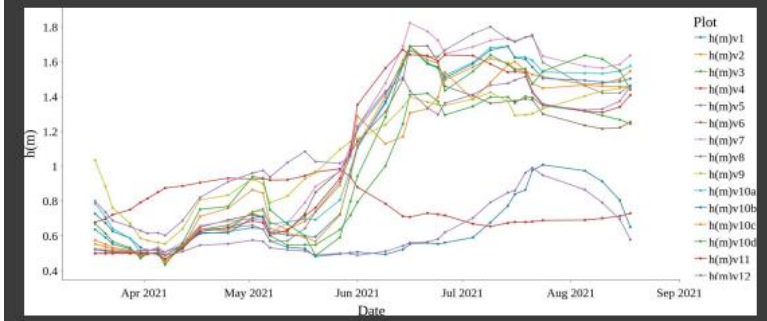
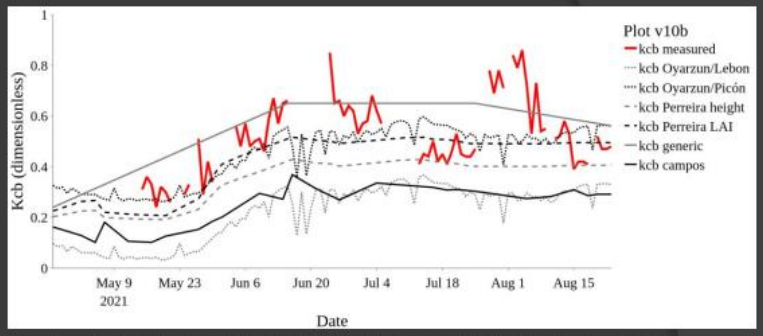
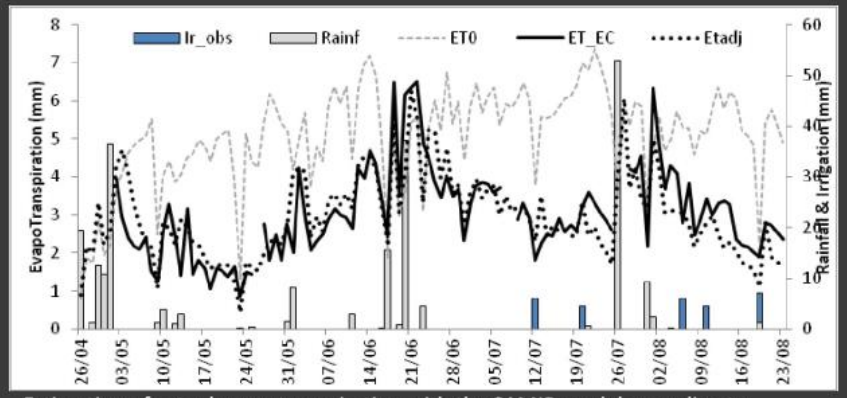
Some preliminary results



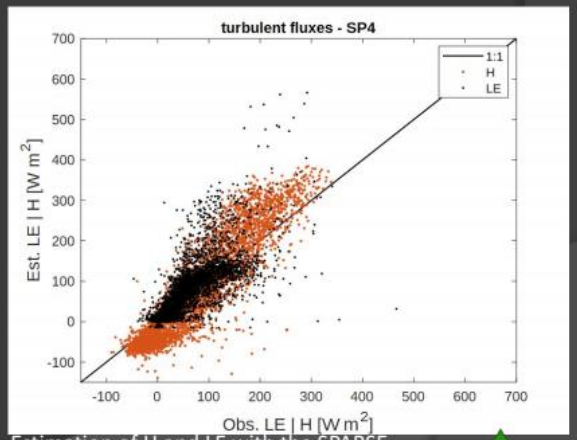
Estimation of canopy height for the 12 plots in 2021 using Sentinel-2



Comparison of measured and estimated K_{cb} with 6 different methods usingSentinel-2 NDVI



Estimation of actual evapotranspiration with the SAMIR model according to the Oyarzun-Picon method for Kcb



Estimation of H and LE with the SPARSE model forced by in-situ IRT