Supplement S4

December 15, 2021

1 Meteorological data from fluxtowers

The meteorological data from SILO was replaced by the flux tower meteorological data for the years that were available. The VOM was run:

1) with parameters obtained by optimizing with just SILO-data, and meteorological data corrected with fluxtower-data

2) with parameters obtained by optimizing with meteorological data corrected with fluxtower-data

1.1 Weatherdata

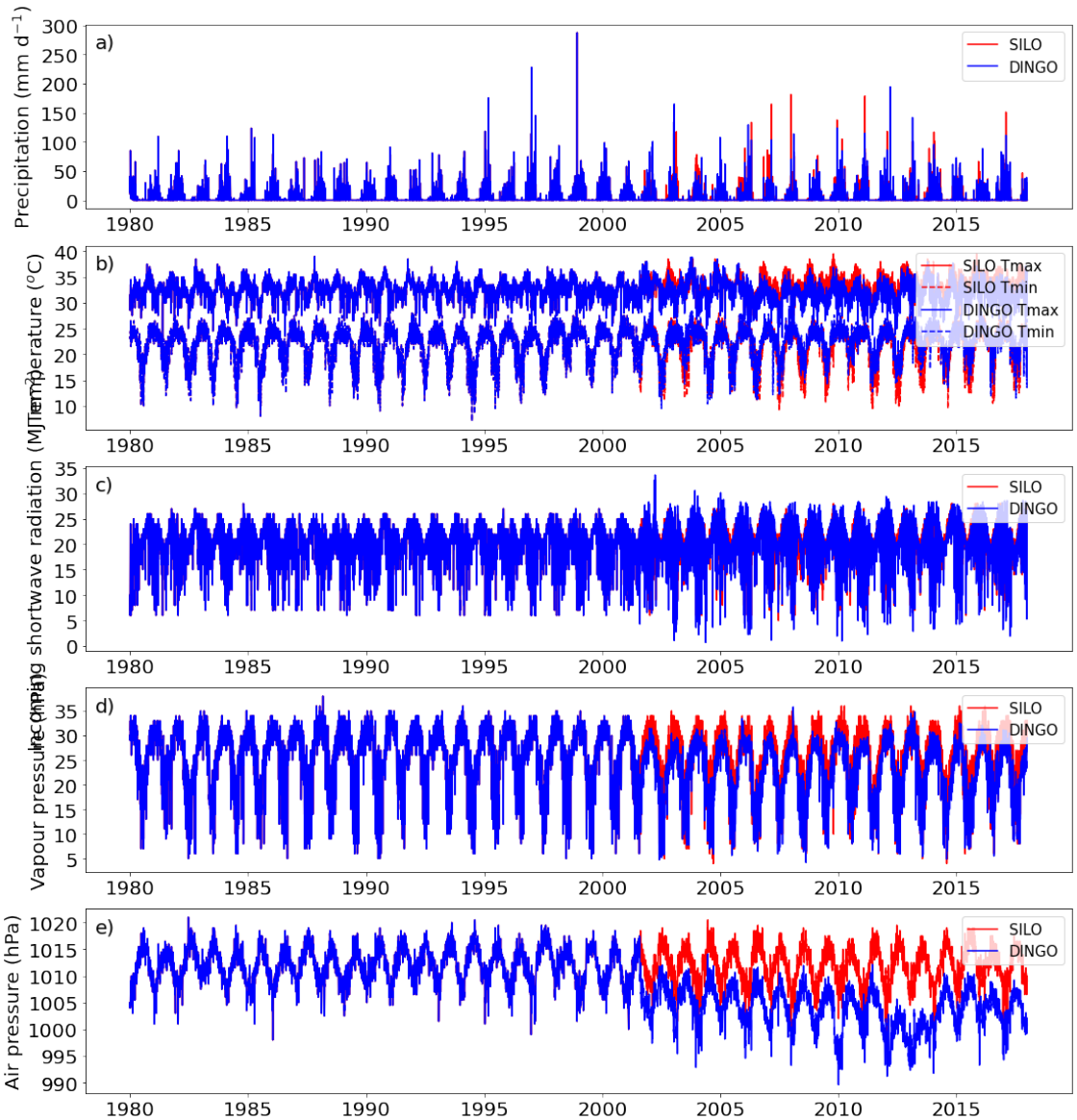

Figure S4.1. *Timeseries for Howard Springs of a) precipitation, b) daily minimum and maximum temperatures, c) incoming shortwave radiation, d) vapour pressure and e) air pressure.*

As shown above, air pressures show strong differences for the SILO and the DINGO data.

1.2 Timeseries

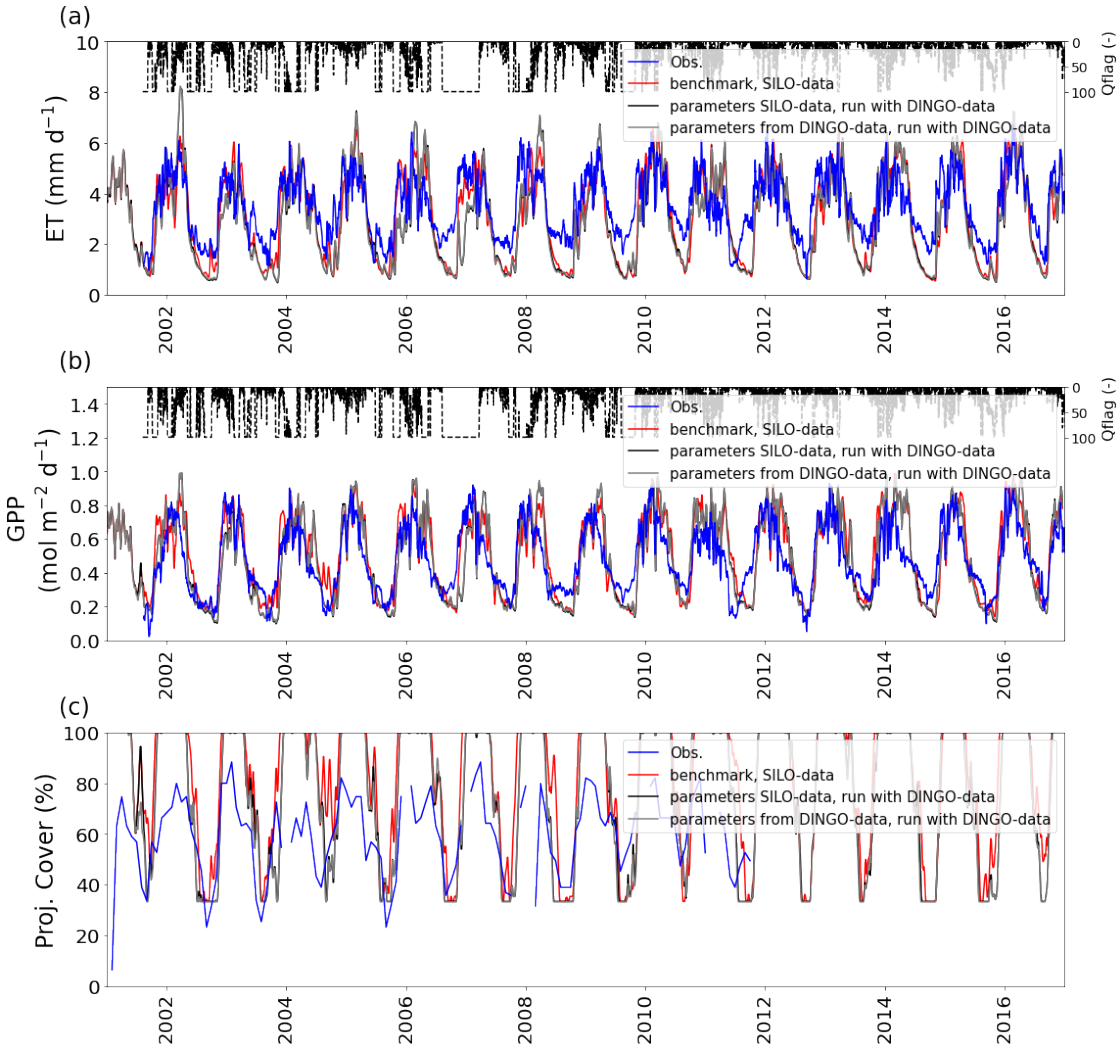

Figure S4.2. *VOM-results for Howard Springs from 2001-2016 (subset from 1980-2016) for simulations with SILO-data (red), simulations with the same parameters (i.e. obtained with SILO-data) using the available flux tower data (DINGO, and SILO was just to extend the time series) in black, and simulations with newly optimized parameters based on meteorological input data that use the available flux tower data (gray), with a) the evapo-transpiration (ET), with flux tower observations in blue b) gross primary productivity (GPP), with flux tower observations in blue and c) projective cover, with the observed fraction of vegetation cover based on fPAR-data (Donohue et al, 2008) in blue. Modelled ET and GPP are smoothed with a moving average of 7 days.*

1.2.1 Comparative analysis

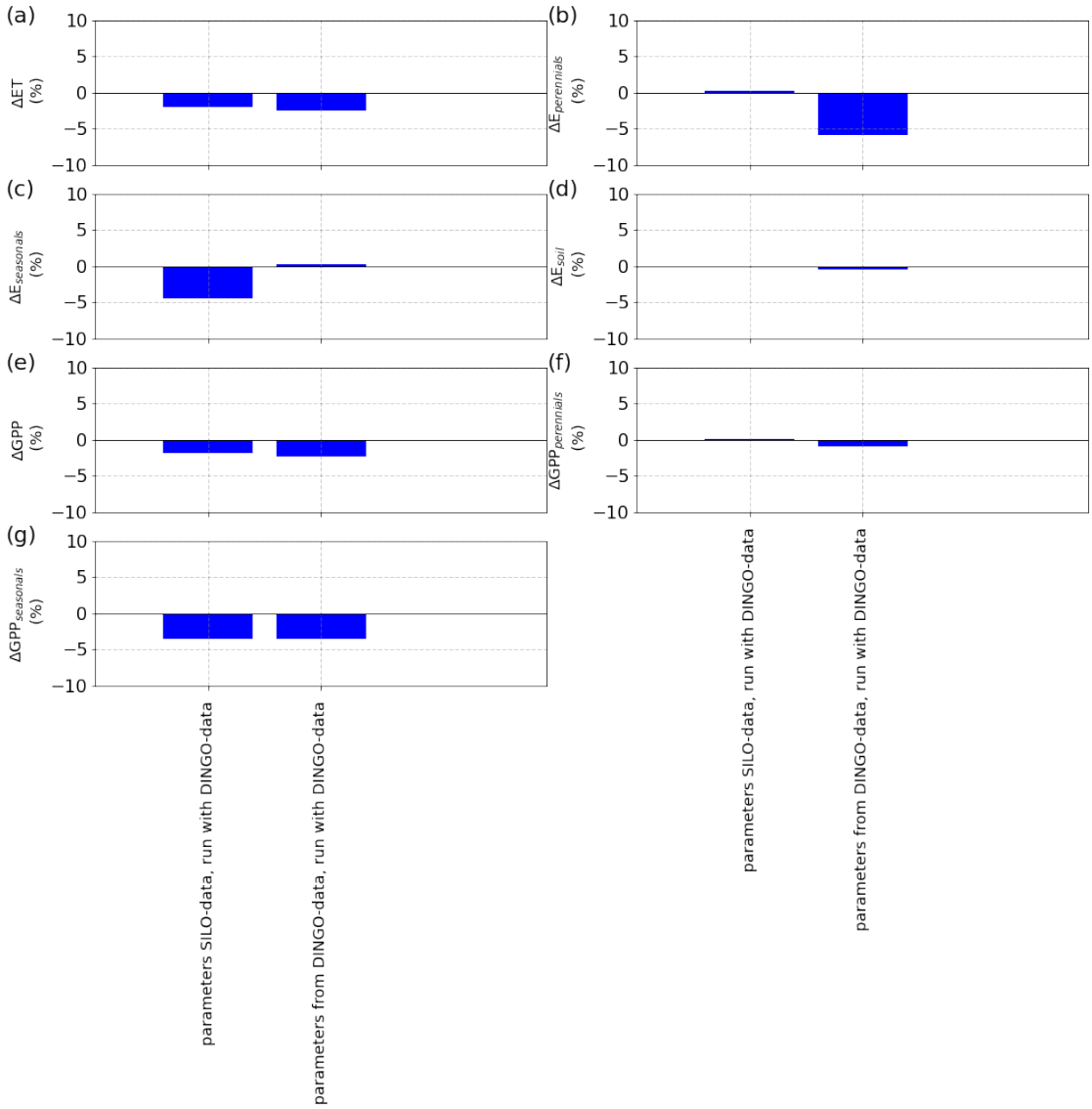

Figure S4.3. *Relative differences between the annual values for the VOM optimized with SILO data and run with SILO data complemented with DINGO-data afterwards, and the VOM optimized for SILO-data complemented with DINGO-data, for a) mean annual ET, b) mean annual transpiration perennials (trees), c) mean annual transpiration seasonals (grasses), d) mean annual GPP, f) mean annual GPP perennials (trees), g) mean annual GPP seasonals (grasses).*