



## Supplement of

## A biophysical approach using water deficit factor for daily estimations of evapotranspiration and $CO_2$ uptake in Mediterranean environments

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## Figures



Fig. S1. Views of the seven study sites along the climatic gradient (a - g) and the newly mobile flux measurement system used in this study (h). This figure is the same as Fig. 1 in main article.



**Fig. S2.** Original (black line) and smoothed (green line) time series of NDVI (MOD13Q1) in the seven sites (see sites in Fig. S1 and respective locations in Table 1 in the main article). Smoothing and interpolation of the 16-day data to daily values was achieved using local weighted scatterplot smoothing technique (LOESS). The elimination of outliers by LOESS is clearly seen in the time series of all sites.



**Fig. S3.** Annual ET (mm y<sup>-1</sup>) summed from daily RS-Met estimates (with  $f_{WD}$ ) and EC, and annual rainfall amounts (P) at Yatir pine forest site for 2003-2014 (a). Linear EC *vs.* RS-Met ET regressions of the annual (b) and daily estimates during dry summer (June-August; c) and rainy (October-May; d) seasons. The R's of the linear fits are 0.78 (P<0.05; N=10) in (b), 0.05 (P>0.1; N=876) in (c) and 0.80 (P<0.0001; N=1570) in (d). The interannual trends in ET/P from EC and RS-Met are presented in upper panel of (a). Note that annual sums of ET from EC and RS-Met in 2012 and 2013, respectively, are not displayed due to the scarcity of available data during these years (>50% missing data).



Fig. S4. Same as Fig. 7 in main article with the addition of RS-Met without the  $f_{WD}$  (grey line).



**Fig. S5.** Cross-site correlations between eddy ET and GPP from EC (red) and RS-Met (black). The RS-Met with the water deficit factor ( $f_{WD}$ ) is shown. The slopes of the linear fits in are 2.32 g C kg<sup>-1</sup> H<sub>2</sub>O and 1.76 g C kg<sup>-1</sup> H<sub>2</sub>O for RS-Met and EC, with R = 0.87 and 0.65 (P<0.0001; N = 243 for both), respectively.