Supplement S5

December 15, 2021

1 Sensitivity of root parameters

1.1 Root parameter i_rootrad

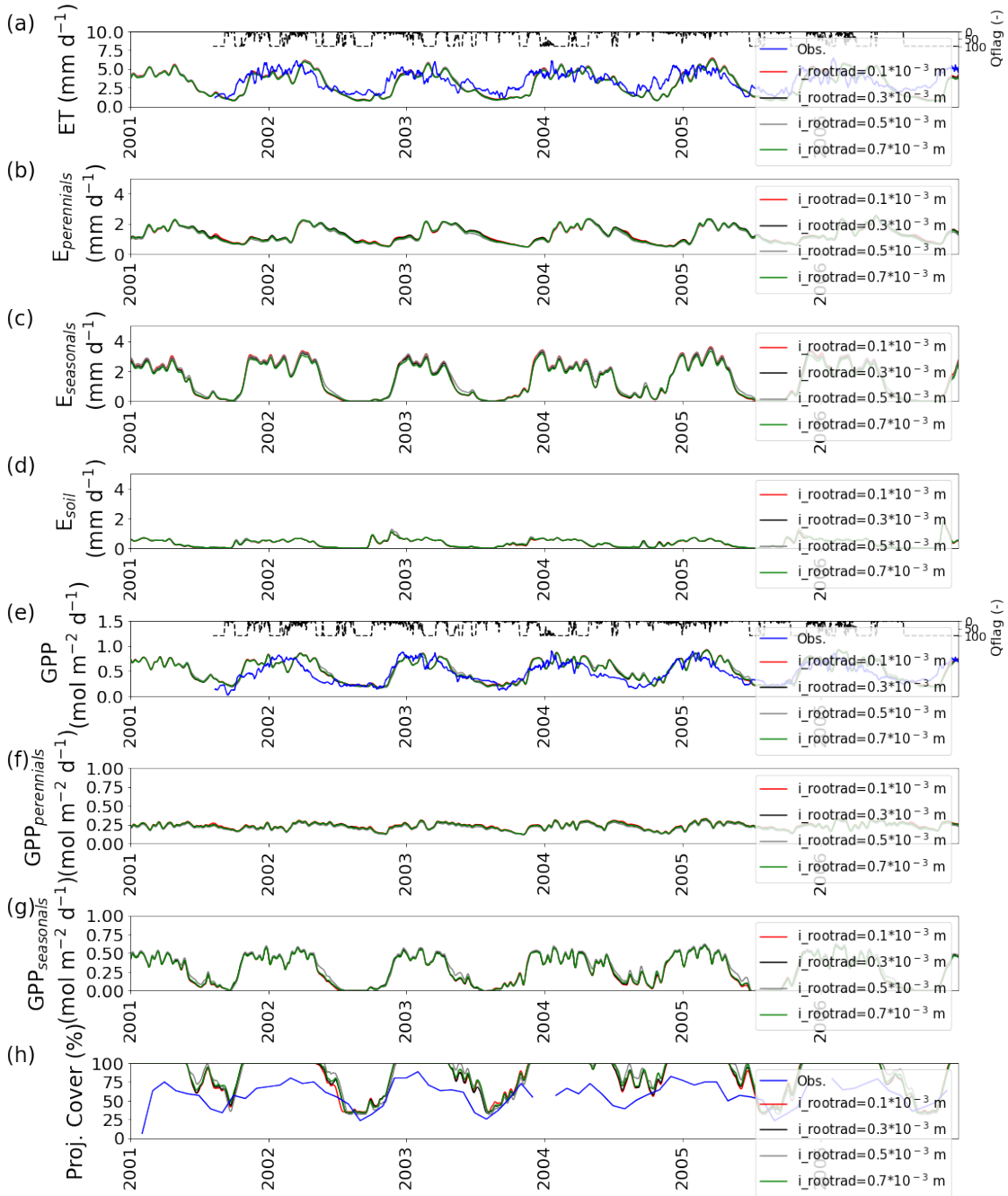

Figure S5.1. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rootrad, with a value of 0.1 10^{-3} m (red), 0.3 10^{-3} m (black), 0.5 10^{-3} m (gray) and 0.7 10^{-3} m (green), for a) ET, b) transpiration perennials (trees), c) transpiration seasonals (grasses), d) soil evaporation, e) GPP,*

f) GPP perennials (trees), g) GPP seasonals (grasses), all smoothed with a moving average of 7 days, and h) projective cover. The daily average quality flags of the fluxtower observations are shown in dashed lines with a value of 100 when a day is completely gap-filled and 1 when it is observed.

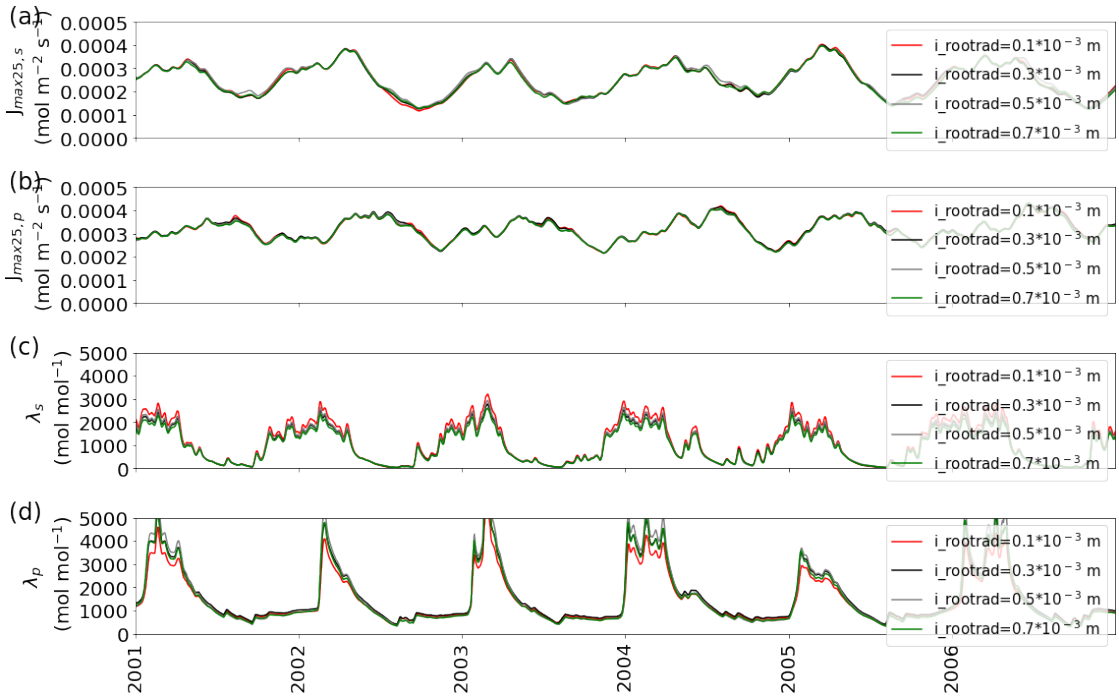

Figure S5.2. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rootrad, with a value of 0.1 10^{-3} m (red), 0.3 10^{-3} m (black), 0.5 10^{-3} m (gray) and 0.7 10^{-3} m (green) for a) the electron transport capacity at 25 ^{o}C for seasonal grasses ($J_{max25,s}$), b) the electron transport capacity at 25 ^{o}C for perennials trees ($J_{max25,p}$), d) transpiration seasonals (grasses), d) the daily slope (λ_s) between assimilation and transpiration of the seasonal grasses, e) the daily slope (λ_p) between assimilation and transpiration of the perennials (trees).*

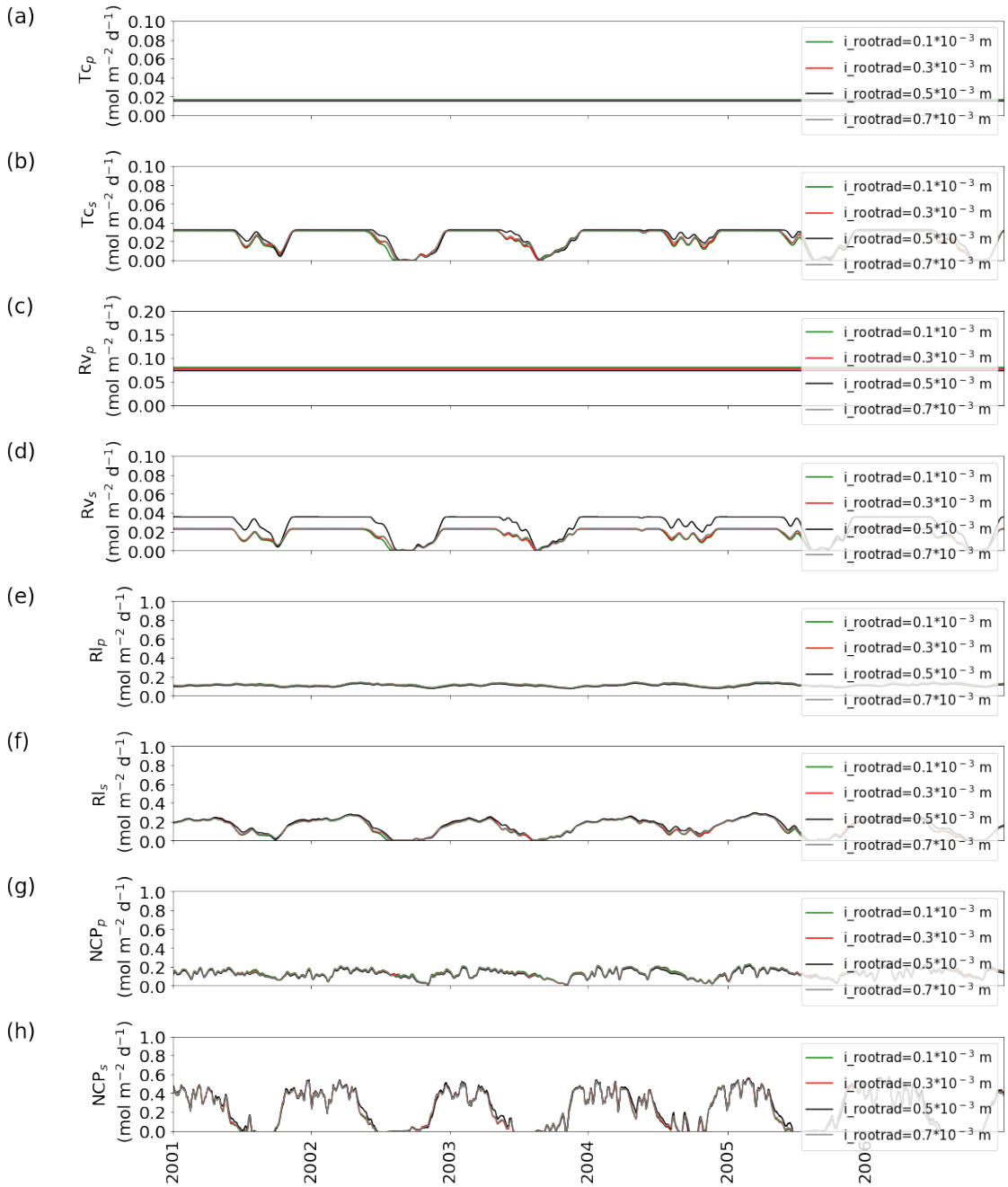

Figure S5.3. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rootrad, with a value of 0.1 10^{-3} m (red), 0.3 10^{-3} m (black), 0.5 10^{-3} m (gray) and 0.7 10^{-3} m (green) for a) the foliage turnover costs perennial trees (Tc_p), b) the foliage turnover costs seasonal grasses (Tc_s), c) the water transport costs for perennial trees (Rv_p), d) the water transport costs for seasonal grasses (Rv_s), e) leaf respiration perennial trees (Rl_p), f)leaf respiration seasonal grasses (Rl_s), g) root respiration perennial trees (Rr_p), h) root respiration seasonal grasses (Rr_s), all smoothed with a moving average of 7 days, and h) projective cover. Note that the original results of Schymanski et*

al. (2015) are not shown, as these variables were not produced as outputs, but only the reproduced values are shown.

1.2 Root parameter i_rrootm

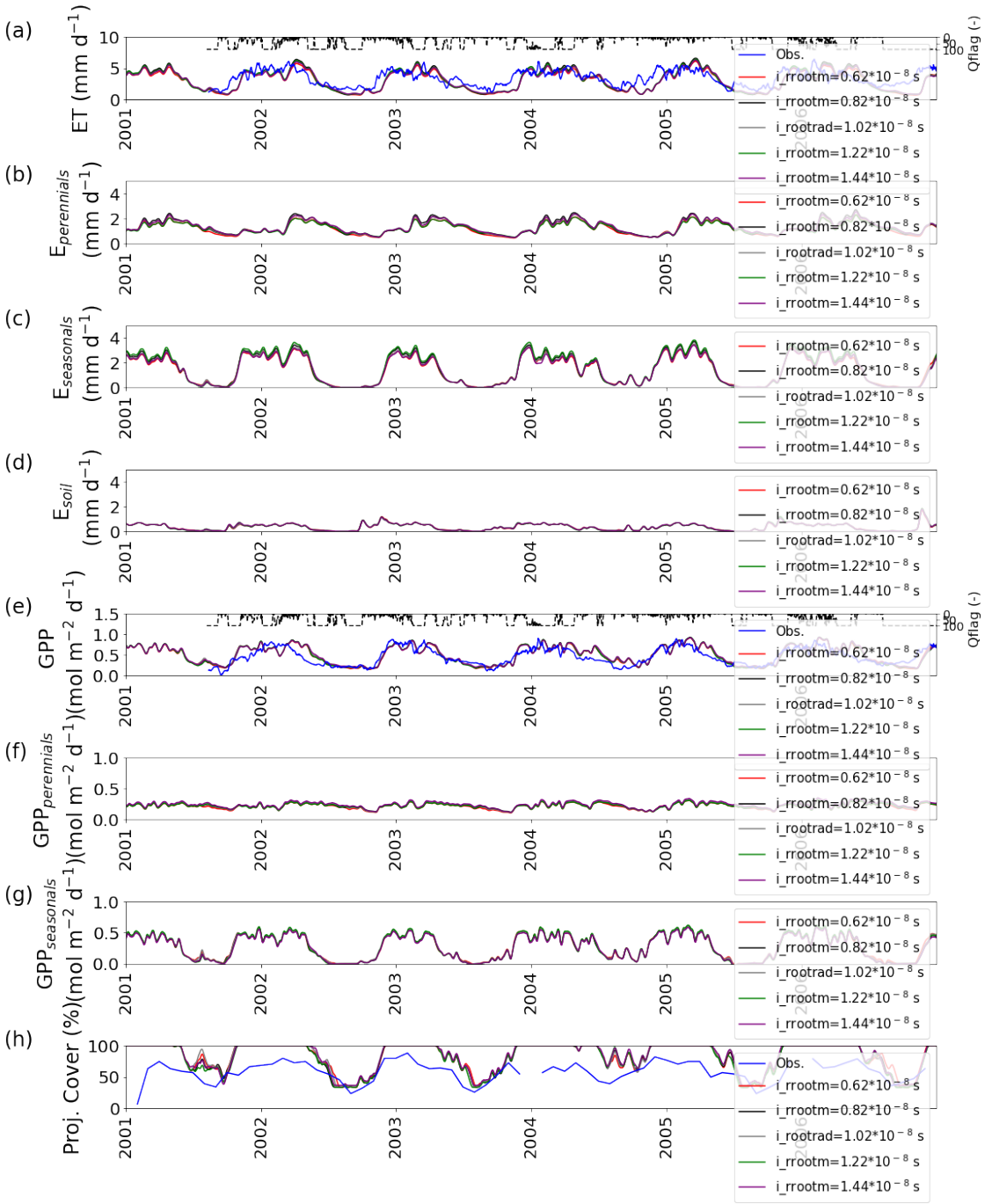

Figure S5.4. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rrootm, with a value of 0.62 10^{-8}*

s (red), 0.82 10^{-8} s (black), 1.02 10^{-8} s (gray), 1.22 10^{-8} s (green) and 1.44 10^{-8} s (purple), for a) ET, b) transpiration perennials (trees), c) transpiration seasonals (grasses), d) soil evaporation, e) GPP, f) GPP perennials (trees), g) GPP seasonals (grasses), all smoothed with a moving average of 7 days, and h) projective cover. The daily average quality flags of the fluxtower observations are shown in dashed lines with a value of 100 when a day is completely gap-filled and 1 when it is observed.

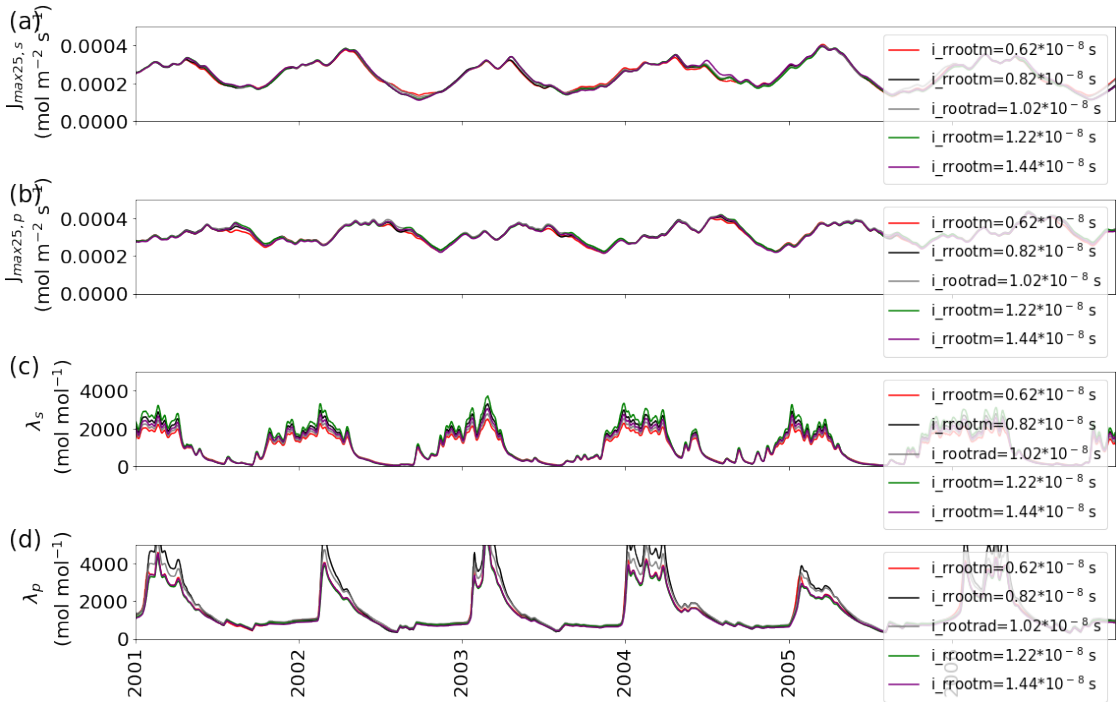

Figure S5.5. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rrootm, with a value of 0.62 10^{-8} s (red), 0.82 10^{-8} s (black), 1.02 10^{-8} s (gray), 1.22 10^{-8} s (green) and 1.44 10^{-8} s (purple) for a) the electron transport capacity at 25 ^{o}C for seasonal grasses ($J_{max25,s}$), b) the electron transport capacity at 25 ^{o}C for perennials trees ($J_{max25,p}$), d) transpiration seasonals (grasses), d) the daily slope (λ_s) between assimilation and transpiration of the seasonal grasses, e) the daily slope (λ_p) between assimilation and transpiration of the perennials (trees).*

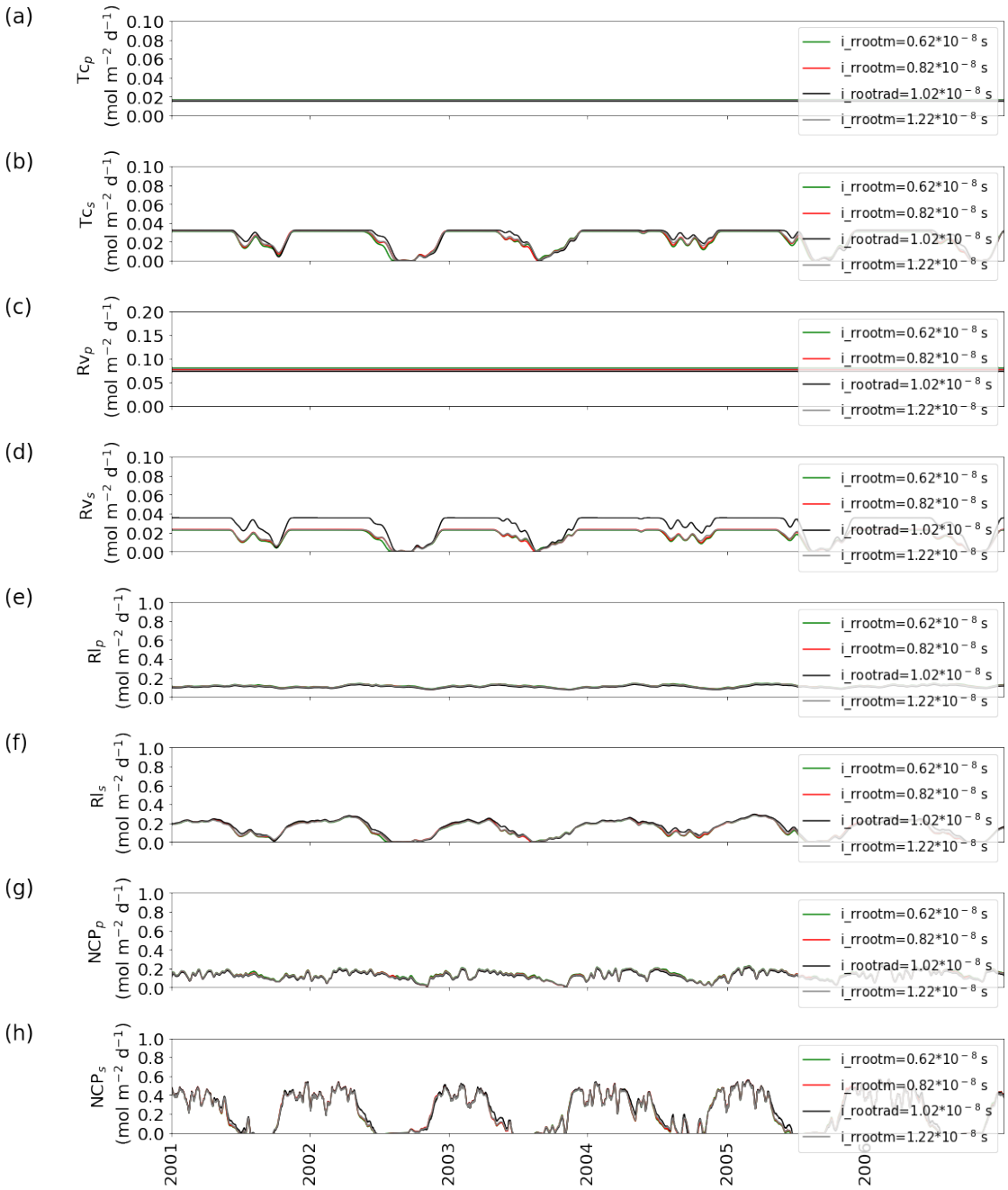

Figure S5.6. *Comparison for Howard Springs from 2001-2006 (subset from 1980-2017) between the results of the VOM-v0.5 for different values of the parameter i_rrootm, with a value of 0.62 10^{-8} s (red), 0.82 10^{-8} s (black), 1.02 10^{-8} s (gray), 1.22 10^{-8} s (green) and 1.44 10^{-8} s (purple) for a) the foliage turnover costs perennial trees (Tc_p), b) the foliage turnover costs seasonal grasses (Tc_s), c) the water transport costs for perennial trees (Rv_p), d) the water transport costs for seasonal grasses (Rv_s), e) leaf respiration perennial trees (Rl_p), f)leaf respiration seasonal grasses (Rl_s), g) root respiration perennial trees (Rr_p), h) root respiration seasonal grasses (Rr_s), all smoothed with a moving average of 7 days, and h) projective cover. Note that the original results of Schymanski et*

al. (2015) are not shown, as these variables were not produced as outputs, but only the reproduced values are shown.