

Interactive
Comment

Interactive comment on “Does soil moisture overrule temperature dependency of soil respiration in Mediterranean riparian forests?” by C.-T. Chang et al.

C.-T. Chang et al.

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We would like to thank Dr. Berridge for the valuable comments. Our responses (AC) to the comments (Ref) are given below.

Ref: It was my understanding that long-term global modelling studies do use a soil moisture correction factor, and do not rely solely on a temperature function to derive heterotrophic soil respiration, as stated on P7993, ln18-19. Whilst I agree that the way in which soil moisture is allowed to influence model output can be improved, it does exist. In fact, there is some debate on the varied methods used to derive the dynamic soil moisture correction factor- parabolic, linear etc. (see Falloon et al., (2011) for

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a comparison between different soil moisture-respiration functions). Maybe you mean that, currently, there is no consensus on the ‘best’ soil moisture correction factor, or that as this parameter is calculated in the same way over time (see Mayano et al., 2012), there is no predictive power for those systems where changes in precipitation regimes and infiltration affect biogeochemical cycling? (AC): Thank you for the correction and references, we have rewritten this part.

Ref: What is the error in the SM data? Is each data point an average of multiple readings? If so, what is the variation? (AC): The error in the SM data is from the three data points of several days reading in each season.

Ref: How much do the PVC tubes (planted 5months in advance) affect normal infiltration of soil water? (even with the two small, mesh-covered holes) (AC): The highest record of the soil water table level at L1 was 46cm, which was still deeper than the depth of PVC tube, therefore, we assumed that the PVC would only affect the infiltration very weakly.

Ref: P7992, In:25- where is the reference for SR being 60-90% of total ecosystem respiration? (AC): We have added the references.

Ref: P7993, In:18-19- examples of studies? (AC): We have rewritten this part.

Ref: The temperature was measured at the same fixed depth at all sites; was the depth temperature gradient the same amongst the different levels, or is it possible that this could also change, akin to the water table depth? This would have implications for the current interpretations. (AC): Unfortunately, we don’t have soil temperature data from different depths. However, we did measure the 30cm integral soil temperature and found very slight differences amongst levels, which might imply that the depth temperature gradient amongst levels, at least within 30cm depth, was very similar.

Ref: Technical Corrections (AC): Corrected.

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