

***Interactive comment on “Transpiration of montane  
*Pinus sylvestris* L. and *Quercus pubescens* Willd.  
forest stands measured with sap flow sensors in  
NE Spain” by R. Poyatos et al.***

**Anonymous Referee #3**

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Transpiration studies in forest stands are very important for hydrology, ecology and forestry, because they provide objective information on behavior of trees of different species in their natural environmental conditions. Especially mountain regions with rough terrain and those where forests are dispersed are difficult to study with micrometeorological methods, usually requiring more homogenous conditions, that is why the sap flow approach applied by the authors seems one of the best for given purposes. Data in the paper were seriously analyzed and the text is well written.

There are only several minor items, which should be considered. E.g. reference evapotranspiration (according to Allen et al. 1998) has been applied by several authors using slight modifications, therefore it will be good to present (not only to cite) the particular equation. Sap velocity (m h<sup>-1</sup>, raw 13, page 1019) can be understand in two ways:

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(a) as the true sap velocity occurring in the lumen of conducting elements (vessels or tracheids), depending physically e.o. on the fourth power of their diameter or (b) mean sap flow density (as measured by some kind of sap flow meters) finally expressed in the same units, but originally expressed per unit of sapwood area as  $\text{m}^3 \text{m}^{-2} \text{h}^{-1}$  (i.e., including also non-conducting parts of sap wood cross-sectional area in addition to lumen of conducting elements). The authors probably have in mind the latter meaning, that is why I would recommend the above mentioned terminology or such where the differences in the meaning would be clearly included. Is the term soil moisture deficit ( $\text{SMD} = q_{\text{max}} - q / q_{\text{max}} - q_{\text{min}}$ ) meant in general or only very specifically for the given site and limited period of study (i.e., does it differ e.g. in different studies at the same site performed in different years)? The term "Julian days" is still sometimes used in biological literature, but it was mentioned earlier (perhaps by Jarvis), that this term is already occupied by astronomers, where it has quite different meaning. That is why the term "Day of year" has been recommended instead. Please check somewhat perhaps contradicting sentences about available literature on sap flow in *Q.pubescens* in row 1 page 1023 and in row 9-13 in page 1025. What authors mean by the cited sentence: "the variation in sap velocity in a *Q.rotundifolia* tree did not significantly affect the estimation of whole-tree sap flow"?

The presented results will be certainly of interest for the scientific community and the paper should be published in your journal, after checking little items as mentioned above.

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