**Biogeosciences
Discussions**

Interactive comment on "Partitioning of catchment water budget and its implications for ecosystem carbon exchange" *by* D. Lee et al.

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This study attempts to relate watershed-scale net primary productivity to transpiration. Isotope measurements are used to partition the total evapotranspiration into transpiration and evaporation. Long-time series of precipitation and discharge data for the Han River watershed are used for this analysis. The estimation of the various hydrological components is carefully done. The results of water use efficiency are certainly useful for assessing the carbon cycle at the watershed level. However, I have the following questions: 1. The NPP values of 250-300 gC/m2/y shown in Figure 5 are surprisingly small, unless much of the watershed is devoid of vegetation. The values are extracted from a M.Sc. thesis by Kim (2006), perhaps using tree ring data. I wonder if this is biomass increment rather than NPP. Biomass increment is often 1/3 to $\frac{1}{4}$ of NPP. How

was the watershed-averaged NPP obtained with tree ring data? Even with this low NPP, I am also surprised to see that WUE values obtained from this study are even larger than those from other studies. Are those WUE values reported in the other studies obtained on the basis of transpiration or ET? 2. It is plausible that NPP is related to transpiration as both are controlled by the stomatal conductance. However, NPP is only part of the carbon cycle, and heterotrophic respiration is not directly related to transpiration. It is therefore not justified to say "The proposed relations provide a simple and practical way to assess the distribution and strength of carbon sink." in Abstract. It should be made clear that transpiration estimation from watershed water budgets and isotope measurements provides useful information for the carbon cycle but not complete information.

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