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Interactive comment on "The influence of riparian evapotranspiration on stream hydrology and nitrogen retention in a subhumid Mediterranean catchment" *by* Anna Lupon et al.

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HESSD-Manuscript "The influence of riparian evapotranspiration on stream hydrology and nitrogen retention in a subhumid Mediterranean catchment ".

There are some points I would like to comment as editor handling this manuscript.

Detailed comments:

L. 20: What is about the nitrogen budget?

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Discussion paper

L: 35: What do you mean here (and elsewhere) with "reduce": changing the oxidative status of N compounds?

L. 39: Why is the residence time large during wet conditions?

L. 57: Why should a losing streams show decreasing N concentrations in the stream? If you only have a losing stream you diminish the load but do not change the concentration in the stream unless other fate processes are affected (e.g., fraction of water exchanging between the hyporheic zone and the stream). Please explain. This is essential also for understanding your hypothesis (L. 70).

L. 67: "direction of water flow. . ."

L. 72: "paramount" seems slightly overstated to me.

L. 79 - 80: Is there any temporal trend in N deposition over the years or are these interannual variations?

L. 85: How do you define the riparian zone? Is it based on vegetation (species composition), pedology or terrain? Please explain. This seems also essential for the subsequent discussion (e.g., Fig. 6).

L. 86: In which direction do you measure the slope here? The steepest descent or perpendicular to the river? Slopes $<$ 10% are not necessarily almost flat.

L. 87: The increase of the basal area is not clear to me, sorry.

L. 117 - 118: Please show the scatter plots for this regression in the Supplementary Material.

L. 123: How frequently were samples taken to the lab and processed? Where there any measures taken to prevent nitrification or any other changes of N forms?

L. 126: Please indicate these four locations on the map.

L. 147: How was sap flow measured?

L. 154: What does n stand for?

L. 167: Please show actual data as scatter plots in the Supplementary Material.

L. 177: I suppose the last term of the right had side is added not subtracted.

L. 182: Again, please show the actual data in the Supplementary Material.

L. 188 - 190: Again, please show the actual data in the Supplementary Material.

L. 252: A higher values implies lower water table levels, correct?

L. 292: What are possible reasons for such low values?

L. 301: What are there references used for Fig. 6? How large (percentage of catchment) are the riparian areas in the respective studies?

L. 352 - 361 : I have problems to follow your argument: On L. 354 you state that the fluxes into and out of the valley reach during the vegetative period were similar and that nitrate export would have been about 15% higher without water lost to the riparian area (L. 357). During the dormant period, the nitrate fluxes are larger (about 18 mg N s^{-1}) without a change along the reach. Under the assumption that the dormant and vegetative period each last 6 months, this indicates that the effect size is in the order of 5% of the annual nitrate export. Is this substantial?

L. 371: What about temperature and pH? Both are known to have an important influence on nitrification rates in streams and temperature will exhibit a pronounced seasonal pattern, I assume (e.g., Laursen & Seitzinger, 2004; Warwick, 1986).

L. 373: See comment above: strong regulation seems to strong an expression here.

References:

Laursen, A.E., Seitzinger, S.P. 2004. Diurnal patterns of denitrification, oxygen consumption and nitrous oxide production in rivers measured at the whole-reach scale. Freshwater Biology, 49, 1448-58.

Warwick, J.J. 1986. Diel variation of in-stream nitrification. Water Research, 20, 1325-32.