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Lysimeter based evaporation and condensation dynamics in a Mediterranean ecosystem	
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Author's response to Referee #2 Giora Kidron Report #3

(Referee comments in black, *author's response in blue italic*)

General comments

The authors presented a thorough, well written account presenting data from a set of lysimeters in central Spain. I warmly recommend publication in HESS pending minor revision.

We kindly thank the reviewer for acknowledging our work and for the additional suggestion that helped to improve clarity.

Main points

a. Figure 3d clearly shows a clear disparity between the amount of dew and fog during the dry and the wet seasons. The authors should add a table that shows the data in the dry and the wet season. The table should include the number and the average amount of rain, dew, fog and vapor adsorption events for each season.
The discussion should also relate to these differences and the possible effect of the vegetation cover and height on the data.

On a related point in the previous revision of the manuscript, we have added Figure E1 such that we feel an additional table would duplicate information.

As the reviewer points out, the disparity between the amount of dew and fog during the dry and the wet season is clearly shown in Figure 3, and this seasonal disparity is additionally depicted in Figure 2.

In order to accommodate this comment, we have added a clarification about the observed water flux differences between the dry and wet seasons (lines 264 - 267 and 275-280) and the respective role of changing vegetation cover (lines 383 - 391).

Now the revised manuscript reads:

Lines 265 - 268:

"On most days, the average NRWI is < 0.2 mm d^{-1} (Fig. E1). Yields of < 0.2 mm d^{-1} are observed on 54 days distributed throughout the year. During the dry season NRWI is predominantly between 0.1 and 0.2 mm d^{-1} while over the wet season, the yields are typically small and < 0.2 mm d^{-1}."

Lines 275-280:

"The weekly sums in Fig. 3 illustrate that the seasonal dynamics are consistent across lysimeters. The ecosystem receives atmospheric water at any time of the year but with shifting relative relevance of the water flux types during the wet and the dry season.

Rain is the dominant liquid water input (i.e. it contributes more than 50 % of the weekly water input) during 29 weeks since its total amount is usually much greater than NRW inputs, whereas NRW inputs are dominant in 24 weeks. They are even the only water input during 15 weeks with adsorption as the exclusive water input in 10 weeks of the year during the dry season.

During the dry season, the median contribution of adsorption is 0.9 mm $week^{-1}$ whereas dew and fog contribute < 0.5 mm $week^{-1}$. With ET amounting on average to 5.7 mm $week^{-1}$, thus adsorption compensates on average for 19 % of the weekly water loss through ET, ranging from 8.0 % at the beginning of June to 42.5 % at the beginning of September. The median contribution of dew and fog is 0.43 and 0.38 mm $week^{-1}$, respectively. Dew and fog occurrence is synchronized with rain with regard to the seasonal occurrence (in the wet season), and therefore their relative contribution to the water input on a weekly scale is small (see Fig. 3d)."

Lines 383 - 391:

"Vegetation height and density affect the radiative exchange of the soil surface and the plant canopy affecting dew formation occurrence and amount (Monteith and Unsworth, 2013). Xiao et al. (2009), for example, observed a positive relationship between maize plant height and the amount of dew formed per night over two years. The grass height and LAI in Majadas change over the season reaching a maximum in height and density usually in winter and spring (Migliavacca et al.; 2017). This is in line with our findings of the occurrence of dew and fog nearly exclusively during the wet season (although it is not possible to separate the effects from meteorological conditions). Unfortunately, no data on plant height and density were collected continuously in the lysimeters columns, which would have allowed studying their effect on the amount of dew formation (and fog deposition). However, due to the active vegetation on the lysimeters, the effect of their variation in height and density is represented in our results."

b. The discussion is long and fluctuates between sections that describe the daily and seasonal distribution, the ecological importance of the findings and technical issues. To increase clarity, I suggest the addition of subtitles to the Discussion in accordance to the main themes that are discussed.

We agree with the reviewer and gratefully followed her suggestion. We restructured and divided the Discussion into four subsections with the following titles:

A. *4.1 Non-rainfall water frequency, duration, and amounts*
B. *4.2 Impact of methodological uncertainty*
C. *4.3 Distinguishing non-rainfall water formation*
D. *4.4 Ecological relevance and open questions*

Some parts within the discussion needed rephrasing to match their new position in the text but the content of the Discussion was not changed apart from the sentences cited above, under Major points a).

Minor points

a. l. 80. Add potential evaporation.

We followed the suggestion of the reviewer and added potential evaporation (l. 80):

"The mean annual potential evapotranspiration calculated with the Priestley-Taylor equation (Knauer et al.; 2018) amounts to 1152 mm year^{-1}."

b. In keeping with publications highlighting the importance of the construction material, please indicate the construction material of the lysimeter.

We followed the suggestion of the reviewer and added the material of the lysimeter (l. 99):

"The site is equipped with three lysimeter stations, each containing two weighable high-precision polyethylen-high-density lysimeters (UGT, Müncheberg, Germany), for a total of 6 columns."