

## ***Interactive comment on “Quantifying energy and water fluxes in dry dune ecosystems of the Netherlands” by B. R. Voortman et al.***

### **Anonymous Referee #2**

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In this manuscript the author has conducted a comprehensive study on hydro-meteorological processes at coastal dunes in the Netherlands by comparing different surface covers. This topic fits well into the scope of Hydrology and Earth System Sciences. As hydro- meteorological processes under vegetation common in dune ecosystem is not well understood, it is worth publishing. Although it is in general well written and I do not see any major flaws, there are a few minor issues that, I think, need to be addressed.

When considering hydro-meteorological processes, water vapor in soils may play a significant role as it is coupled with heat transport as well especially under dry condition. In this manuscript, water vapor transport is completely ignored. For example, the authors found that the modeled ET<sub>a</sub> did not agree well with the observed ET<sub>a</sub> during the

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drying period. Inclusion of water vapor process in the model may be necessary. Any comments, discussions, or some additional analysis should be included.

I do not know much about plant physiology but I am wondering if moss shows any water repellency during the dry periods. That also may be one of the factors affecting the evapotranspiration rate.

My last comment is about the heat flux measurement. Heat flux and storage at 8-cm depth was used to represent surface heat flux and storage following the instruction by Campbell Scientific Inc. I am wondering if this underestimates heat flux at least as soil temperature gradient may be significantly lower at 8-cm. It may be worth looking some sensitivity.

I have some specific comments as well. 1. P4555, L20: 2013 not 2043 2. Eq. 12: There is no  $\bar{x}$  (mean of the observations) in the equation.

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