

# ***Interactive comment on* “Climate change, re-/afforestation, and urbanisation impacts on evapotranspiration and streamflow in Europe” by Adriaan J. Teuling et al.**

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We thank the Anonymous Referee for the constructive comments and suggestions for additional references. We tried to be as complete as possible in covering the literature on several relevant aspects, but obviously we still missed some important papers. These will be included in a revised version. Concerning some of the points raised by the reviewer, I would like to briefly discuss the following:

- Values for parameter  $w^*$ . We will check the database of Sterling. However it should be stressed that all data have been collected based on the following cri-

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teria: 1) fully homogeneous land cover, 2) multi-year records whenever possible (very few seem to exist for homogeneous urban areas, hence we used shorter records here which might be justified given the much shorter response times of the ET timeseries), 3) robust measurement techniques (eddy covariance observations might lead to opposite land use effects of ET, see discussion in Teuling, VZJ, 2018). Unfortunately we were not able to locate any datasets satisfying all criteria in Northern or Mediterranean parts of Europe. We are happy to receive any specific suggestions on datasets that do satisfy these criteria. Of course it should be noted that one of the key assumptions behind the Budyko framework is that the model parameter itself does not depend on climate (although it might depend on seasonality), and that extrapolations into either extremely water or energy limited regimes will not be very sensitive to exact values of the parameter.

- Land use classes. We choose to use a limited number of land use classes reflecting those that have the biggest known impact on ET (forest, cities). One of our reasons to exclude open water is that little is known about long-term controls of evaporation of water bodies. While it may seem attractive to assume that evaporation will take place at a potential rate above lakes, radiation or temperature are likely not the main drivers because of the high thermal inertia of water bodies and the important role of atmospheric stability. We preferred not to consider them rather than to make unconstrained and uncertain estimates. We will motivate this better in a revised version.

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