

Interactive comment on “Water-use dynamics of an alien invaded riparian forest within the summer rainfall zone of South Africa” by Bruce C. Scott-Shaw and Colin S. Everson

Anonymous Referee #3

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Review of Water-use dynamics of an alien invaded riparian forest within the summer rainfall zone of South Africa by Scot-Shaw and Everson.

The authors present a relevant data set on water use of several indigenous and invading tree species in the Mgeni catchment in KwaZulu-Natal in South Africa over a period of two years. The results show a remarkable difference in seasonal water use between indigenous and alien species. The alien species maintain high transpiration rates during the winter period, whereas the indigenous species strongly reduce transpiration during the winter months. Water use measurements taken at the level of individual trees were upscaled to the scale of a forest to quantitatively compare a pris-

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tine forest with an invaded forest scenario. The results may provide information for the management of this specific ecosystem.

Although the presented results appear sound and report relevant differences between native and alien trees species in this specific region, I'm under the impression that the authors are trying to slice their results a little too thin. The authors report that the hydrological campaign was conducted in conjunction with an ecological study (page 2, lines 6-7). However, the present study does not report on the ecological implications of the study. Are the ecological results to be reported in a separate study? Or is this the paper by Everson et al. (2016) that the authors refer to at a later stage in the manuscript? To me it remains unclear, specifically as I could not find the Everson et al. (2016) paper in the reference list. Despite the potential relevance of the species-specific water use measurements, the real added value of these data lies in their potential to indicate ecosystem benefits gained from removing or promoting the establishment of specific tree species relative to others. However, the current hydrological data set does not provide sufficient information to support such decisions. I therefore advise the authors to include data from their ecological study in the present hydrological study to interpret the hydrological differences between pristine and (heavily) invaded sites in terms of ecosystem functioning.

Comments: - Reference list appears incomplete - Reported wood density in table 1 is in tonne m^{-3} , not kg m^{-3} - Please report standard deviations alongside the averages in tables 1 and 2 to provide some information on the variability of the data underlying the average. - Please provide some more information on how the water use at the tree level was upscaled to the forest level. This is not described in the methods section at all. - Please analyze and discuss in more detail which plant functional traits determine the difference in water use between native and indigenous species. - Please indicate in figure 1 where exactly the site is located, perhaps by adding a dot in the lower right panel.

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