

***Interactive comment on “The effect of drought and interspecific interactions on the depth of water uptake in deep- and shallow-rooting grassland species as determined by  $\delta^{18}\text{O}$  natural abundance” by N. J. Hoekstra et al.***

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This paper provides very useful and insightful results into the impact of drought on water uptake, from deep- and shallow-rooting species.

It would be useful if the authors provide details based on the latest IPCC projections of which regions will be likely to experience more drought, more severe drought. Although it is commonly argued that drought is occurring in many locations, it is clear that rainfall will increase in some regions, and at some times of year.

C432

It would be curious to consider whether this effect of altered depth in water uptake also occurs in trees, which have deeper roots than grasses. Zeppel et al 2008 report this:

"( b) water uptake must have occurred from depths of up to 3 m; ( c) sap flow was independent of the water content of the top 80 cm of the soil profile; "

Zeppel, M.J.B. et al., 2008. An analysis of the sensitivity of sap flux to soil and plant variables assessed for an Australian woodland using a soil-plant-atmosphere model. *Functional Plant Biology*, 35(6): 509-520

The paper would also benefit if the authors focus more on the soil water content of each layer, and highlight more clearly their soil water content results.

Also, given future climates are likely to experience more extreme precipitation, it would be useful if the authors consider the framework presented by Knapp et al. 2008 - where changed precipitation leads to water logging in some instances, and drought in others, depending on rooting depth of the species.

See Knapp, A.K. et al., 2008. Consequences of more extreme precipitation regimes for terrestrial ecosystems. *BioScience*, 58(9): 811-821.

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C433