

## ***Interactive comment on “Responses of woody species to spatial and temporal ground water changes in coastal sand dune systems” by C. Máguas et al.***

**Anonymous Referee #1**

Received and published: 9 April 2011

This manuscript describes an interesting experiment on the responses of woody species, contrasting for rooting depth and water-use strategies, to changes in water availability and in ground water accessibility. The experimental design is well thought out and the results provide novel and useful information about water-use strategies in different species using the stable isotopes of C and O. The manuscript is well-written and therefore, it deserves publication after minor revision. Some suggestions for improving the manuscript are as follows. The introduction is a bit long and could be easily shortened. P. 1596, ln. 10: water potential measurements “were made on 5 plants per microsite . . . .”; It is not clear if this means that 5 plant per species per microsite were measured or just one per species (i.e., 5 plants in total per microsite). Please

C518

specify. Page 1597, lines 5-12: The assignment of values equal to 0Carbon isotope discrimination – It is now preferable to refer to Vienna PDB as the international standard. Page 1599, line 2: I suggest to change as follow: “The isotopic signature of GW was distinct and generally more depleted than precipitation. . . .”. P. 1599, lines 13-18. This sentence is misleading and unclear. The seasonality effect was not equally evident in all species, but rather some species showed more season dependent changes in  $\delta^{18}\text{O}$ . From the analysis of Fig. 3, it appear that *Corema album* is not the species with most variable  $\delta^{18}\text{O}$ . In fact, Fig. 3 shows wide variations around means and medians. Please check comments to this figure. It should be relevant to show  $\delta^{18}\text{O}$  values measured in organics in different species and conditions. Do Authors measure the O isotopic composition of plant material or of carbohydrates? Figure 6: the relationships between GW use and the C isotope composition are interesting. This would imply a differential impact of GW on water use efficiency in different species which is not surprising but deserving some more discussion.

---

Interactive comment on Biogeosciences Discuss., 8, 1591, 2011.