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Discussions

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Interactive comment on "Trade-offs between water loss and carbon gain in a subtropical primary forest on Karst soils in China" *by* Jing Wang et al.

Anonymous Referee #2

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The strategy of water-carbon regulation of plants in water stressed region, e.g. karst area, is an interesting topic. This study measured 189 A-Ci curves for 63 species and try to answer the limitations of CO_2 diffusion (gs and gm) and Vcmax on A and iWUE in different life forms. Considering that the authors collected many valuable data of different life form plants, it's worth publishing. The topic is not very new but still interesting if can the data can be well organized and presented. However, the results are not well analyzed and presented. the discussion didn't focus on the title and there are many other issues that authors should substantially improve on the current manuscript. General comments:

1. The author use "Trade-offs between water loss and carbon gain" in the title, however, the whole-text actually talk about the limitation of different components on A and iWUE.

It's better to rephrase the title.

2. In the method section: The species covered wide range of functional groups, including 6 life forms. What the criteria of the species selection? Because the leaf habit (evergreen or deciduous), the shade or light-demanding behaviors also will affect the strategy of plant carbon-water regulation. For example, does fern grow in the canopy or understory, how you can put them together when analyze the data?

More important, the main objective of this paper was to determine and distinguish the limitations of CO_2 diffusion and Vcmax on A and iWUE in different life forms Karst forest, however, you combine all species together for most analysis, actually we do not know what's the difference between different life forms in Figs 1-4, 6,7. I Believe most land plant will behave in similar way to adapt to the environmental factor no matter where they grow, the interesting things is to what extent by different plants. For example, Based on Fig 5, we could not see any difference among the groups. So, I suggest the author should separate into 6 groups to see the differences of regression lines among groups for all the figures, and compare the difference among the life forms using proper statistical method.

3. lines 139-140, because the A-Ci curve is the key data of this paper, author should describe in detail how this measurement was done rather than just cite other submitted papers. For example, you should introduce the he,ight of your targeted individuals? how you can measure the sun-exposed leaf for canopy trees and climbing plants. . . .? did you measure in situ or cut down, if the latter, for A-Ci curve you normally need ca. 30 min, how you can avoid the effects of cutting on stomatal conductance because some species are very sensitive, do you have some information on the gs sensitivity for those speciesïij§. . ...

Specific comments:

1. Line 267-269: There is no statistic tests of the differences of the results in figure 5, so it is not proper to give the statements in line 309-310. Figure 5 can't give any in-

formation that is about LMA. Please use data to demonstrate the relationship between LMA and other parameters instead of qualitative description.

2. Line 372: Species with low LMA may have thick cell walls in mesophyll and chloroplast.

3. Line 381-382: In your results, gs and gm are positively correlated, why did you conclude gm is a compensate for reductions in gs? Did you observe an increasing of gm when gs decreased.

4. Line 384-389: I don't think you have enough evidences to state "there was a trend of increasing lm with increasing leaf N:P", unless you add this part of research in your draft.

5. Awful sentences, Lines 39-35, should split into short sentences

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