

## ***Interactive comment on “Comparisons of stemflow yield and efficiency between two xerophytic shrubs: the effects of leaves and implications in drought tolerance” by C. Yuan et al.***

### **Anonymous Referee #2**

Received and published: 22 September 2016

General comments: This study explored stemflow yield in relations to rainfall characteristics and the plant traits of branches and leaves for two dominant shrubs (*C. korshinskii* and *S. psammophila*) during rainy seasons in the northern Loess Plateau of China. This manuscript reports important data on stemflow measurements at the scale of individual branches and highlights the effect of canopy structure (e.g. biomass, the leaf area of the branches, the leaf numbers of the branches, stemflow productivity, and the funnelling ratio) on stemflow production. The finding of this study is interesting and fall into the scope of the HESS. However, my main concern is the title, results and discussions are not really robust and can't be fully supported by data, and the interpretation is weak. The specific comments are listed as follows: (1) Title: The “the effects of leaves

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and implications in drought tolerance” in the title is not well reflected in the results of this study. Although measurements of leaf area index (LAI), the foliage orientation, the leaf area of the branches and the leaf numbers of the branches were made in the study, results of species-specific variation of plant traits (line 236-283) just mainly qualitatively described leaf traits, branch morphology and biomass, which were not directly linked with stemflow characteristics. Moreover, results of this study indicated that precipitation amount was the most influential rainfall characteristic and stem biomass and leaf biomass were the most influential plant traits that affected stemflow in *C. korshinskii* and *S. psammophila*, so the effects of leaves on stemflow were not well investigated in this study. In the case of implications in drought tolerance, authors mainly discussed with personal speculations, there were not solid soil water data to verify it. So I suggest author could delete “the effects of leaves and implications in drought tolerance” from the title. (2) Introduction: The objectives of this study were not clear, what’s the new findings made by this study? What’s the knowledge gaps in stemflow researches for shrubs? In fact, stemflow of *C. korshinskii* and *S. psammophila* were already studied in China, what’s the difference between studies? I wonder if authors can highlight the stemflow yield from branches and stemflow productivity between shrubs. (3) Materials and Methods: As shrubs grow during the rainy period, at what period (time) or measurement frequency do authors measure plant traits, particularly for biomass (line 175), how can you confirm them represent real plant trait dynamics, which were not clearly described in the text. Line 155: what’s the “modular organisms and multi-stemmed shrub”? (4) Results: For the most part of the “3.1 Species-specific variation of plant traits”, it is not really the results of the study, I would suggest authors move some of the description of *C. korshinskii* and *S. psammophila* to the section of “Materials and Methods”. Line 387-390: it is not clear, why big difference existed between rains  $\leq 10$  mm and the heavy rain. (5) Discussions: I would suggest authors focus on the interpretation of the results of this study, but not speculations on utilization of more rains via a low precipitation, there was not direct evidence or robust data to support the proposed conclusion. (6) English languages needs refine by a native English speakers.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-420, 2016.

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