

Interactive comment on “Rainfall pattern greatly affects water use by Mongolian Scots pine on a sandy soil, in a semi-arid climate” by Hongzhong Dang et al.

Anonymous Referee #3

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Drought is the key limiting factor on afforestation in the arid and semiarid areas, also is the main reason for degradation of the artificial forests. The study presented a theme of great interest: the response of sap flux density of Mongolian Scots pine (*Pinus sylvestris* var. *mongolica*) to increasing levels of drought from wet to moderate-drought, severe-drought and extreme-drought, as well as its relationship with variable precipitation, soil moisture and groundwater table. It is very useful with regard to explaining the degradation of Mongolian Scots pine forests, and guiding afforestation and management of Mongolian Scots pine forests. The MS is suitable to publication in this journal. However, some small problems need to be modified in the present version of the manuscript. My comments are shown as follows: 1. In abstract, what is MP

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on Line 27? It should be listed in the beginning sentence. 2. In order to understand the sandy soil conditions, suggest author to provide more details, including texture and nutrient content about the soil at the research area at the part 2.1 Site description. 3. In conclusion, authors considered that the degradation in this MP plantation was attributable to the combined effects of rainfall, the sandy soil and groundwater table. So some information on growth status of Mongolian Scots pine in research area should be provided at the part 2.2 Trial plots and sample trees. Degradation or not? 4. How many sets of soil moisture sensors were installed? Where the soil moisture sensors were installed? Inside or outside of the plot? How far were they from plant stand? 5. In Fig.4, Fig.5 and Fig.8, regression equations should be carried out significance test, and significant coefficient should follow the linear regression equations in figures. 6. The driving factors for the degradation of artificial forests not only include drought, pest and fire disaster, but also include man-made factors, especially high afforestation density. In discuss part, the author should discuss the planting density can be loaded by variable rainfall in research area. Whether the degradation of MP was related to the planting density? And can you put forward or suggest the rational plant density of MP on the sandy soil in the different areas with different rainfall? 7. Throughout the MS, there are several spelling errors. For example, “sapflow” on Line 101 should be “sap flow”, “annualprecipitation” on Line 87 should be “annual precipitation”. 8. Precipitation and rainfall were used in MS, including Figure. However, some scholars consider the Precipitation and rainfall are different. Precipitation should be in any form, covers all forms of water being released by the atmosphere, include rainfall, snow, drizzle, sleet. 9. In conclusion, first sentence “The relationships between sap flux and atmospheric demand, soil and groundwater table were analysed to show to what extent and how the water use of MP in sandy soil is limited by drought.” should be deleted or removed.

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