

## ***Interactive comment on “Impact of changes in freezing and thawing on foliar litter carbon release in alpine/subalpine forests along an altitudinal gradient in the eastern Tibetan Plateau” by F. Wu et al.***

**Anonymous Referee #1**

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This paper presents the effect of temperature on the decomposition (or C loss) of three foliar litters at 4 locations varying in altitude and temperature (and other features) in the eastern Tibetan Plateau over a two-year period. It was found that the overall C release rate was slightly faster in the higher elevation sites and the seasonal rates varied among the litter types and the sites. It was speculated that warmer temperatures may slow down the rate of litter decomposition in this environment. This experiment was well-designed and the findings was interesting. However, there are some areas for the manuscript to be improved. The discussion and conclusions should be much

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clearer, based on the objectives to examine the effects of freezing and thawing on the litter decomposition and to determine how the effects vary with altitude or dominant tree species. Some revisions are necessary before it can be considered for publication.

Specific comments:

Title can be changed to be "Impacts of freezing and thawing dynamics on foliar litter carbon release in alpine/subalpine forests along an altitudinal gradient in the eastern Tibetan Plateau".

Line 1 : Carbon (C) release includes two processes, one is respiration by microbial activities, and another one is C leaching. Thus, the first sentence emphasized the importance of C flux results from respiration, but neglected the leaching, in particular at early stage of decomposition. Line 9: “but higher altitudes exhibited” . . . . . change to “but high altitudes exhibited high C release”. Line 14-15: the conclusions should be more directly from your study. Line 114 -115: the temperature is not a fixed value and should be a range, because there are four sites at different altitudes. Line 140-143: Litter of each tree species was placed in their own litter bag separately, or together in a bag? Line 182-184: why not use “k”? Line 305: Do you want to say the different among tree species? If yes, please use initial litter chemistry to reinforce your conclusions. Line 346: What did your study agree with? Line 385-387: please point out that the higher C release rate was the results of two year observation.

Table 1: please use variance analysis to determine the difference among tree species.

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