Comments

The critical factors that affected the distribution of

aboveground biomass in the alpine steppe and meadow,

Tibetan Plateau

By J. Sun, G. W. Cheng and and W. P. Li

GENERAL COMMENTS

Using CART model, the work in this manuscript presented by J. Sun provides in-depth analysis of the key controlling factors of AGB in alpine steppe and meadow on the Tibetan Plateau. In comparison with correlation analysis, this model alleviates auto-correlation among dependent variables and influential factors. It is helpful for understanding the AGB patterns of alpine grassland and controlling factors. However, the manuscript needs a minor revision for publication.

My concerns are:
1. Firstly, English writing must be improved. Specially, appropriate singular and plural should be use correctly. A native English speaker is suggested to help improve it.
2. The analysis does not include slope and aspect as factors in topographic factor. In conclusion it does not make sense that the authors highlight the importance of mechanisms of slope and aspect in explaining AB alpine grassland.
3. In conclusion, I require the authors to add vale of the CART and GAM model to screen factors and predict AGB patterns.

SPECIFIC COMMENTS

1. "Sometimes the fitting results would be contrary to common sense, but it does not prevent us from finding the most effective environmental factors, which is the essence of this method" in page 14569 line 17-19. Why you are so superstitious the method if it cannot reflect the common sense!
2. In the text, some description such as "AGB patterns", "the abundance of AGB", "the trend of AGB" and "the distribution of AGB" might be similar meaning. Can you use consistent concept for them.

TECHNICAL CORRECTIONS

1. Page 1 Line 4: "Alpine grassland here is an important component of the global carbon cycle". Grassland is an ecosystem. It is not appropriate to say it is a component of C cycle.
2. Page 14563 Line 20-27: Description of species composition in alpine meadow , *Polygonum viviparium* is not common in the most of meadow.
3. Page 14566 Line 14-22: move this method section of CART to method section.
4. Page 14566 Line 23: What is CP? Please clarify CP in the method section.
5. Many places confound singular and plural noun. For example, datum and data, index and indices, maximum and maxima as well.

Figures:

Fig.1. The description in figure title and legend is not consistent. The black solid circles represent the samples collected in alpine steppe (not steppe but meadow), and the black solid triangles represent the samples collected in alpine meadow (not meadow but steppe).

Fig.3. This figure is not clear.

Fig. 4. and Fig. 5. what are the lower panels of these figures stand for? You should describe clearly in the title of figure.

Fig. 6. Why use density but not frequency of the data? What does density mean? How do you calculate it?

Fig. 7. and Fig. 8. what are the y-axis standing for? Are they biomass or biomass change amplitude? Please clarify in Materials and Methods section and in the figure title.