We thank Dr. Stavi for the constructive and insightful comments, which highlight important aspects in the clarification of methodology and interpretation of the results. The following revisions have been made according to the reviewer's suggestions.

1) We added a short paragraph in the section 4.4 "Uncertainty of prediction" about the grazing impacts on soil carbon:

> Another limitation in our models could stem from ignoring the influences of grazing. Direct and indirect impact of grazing on soil parameters, such as bulk density, soil moisture and carbon contents have been described and discussed in various studies (Stavi et al., 2008; Wu et al., 2010; Hafner et al., 2012). At low grazing intensities, concentrated movements of livestock in areas with changing micro-topography on a small spatial scale mostly affect soil properties, often in a very complex way (Trimble and Mendel, 1995;Stavi et al., 2012). Since cattle tracks and pathways are obvious infield, we avoided taking samples from such places to minimize the grazing and other livestock-induced disturbances. Although sampling sites were selected against this background, nomadic pastoralism is ubiquitous in the Inner Mongolian and Tibetan grasslands, and can hardly be completely excluded. However, small-scale grazing variability in our study region may be not as pronounced as in other pasture grassland regions of the world for most of the investigated sites, as especially *Kobresia* dominated ecosystems have developed very stable felty topsoil horizons (Kaiser, 2004) that have formed during more than 6000 years of nomadism (Schlütz and Lehmkuhl, 2009). What extent of grazing impacting on soil carbon in our study region is still difficult to quantify.

2) We also modified the section 2.3 "Climate data and statistical analyses" to clarify why we did not consider the grazing impact in our model:

> We did not include the overall grazing intensity as covariate in our model because our approach focuses on landscape scale stretching across regions with particular climate and geomorphology. Grazing patterns and grazing intensities are supposed to vary greatly in such diverse regions. Official data cannot be used to reflect the pattern since they are bound to county and provincial boundaries.

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