

Clim. Past Discuss., author comment AC5
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Reply on RC4

Michael Kempf

Author comment on "Monitoring landcover change and desertification processes in northern China and Mongolia using historical written sources and modern vegetation indices" by Michael Kempf, Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-5-AC5>, 2021

Changes of plant morphology to adapt environmental change such as decreasing precipitation and temperature can be seen as 'degradation'? As I think, environmental issues caused by human can be regarded 'degradation'. Otherwise, they are natural laws.

You are totally right about the terminology! But now, when I am thinking of the temporal frame of the period under consideration and the already high anthropogenic overprint in the region (and the world basically), it would also be a question whether environmental signals can be considered separate from human-induced changes. I mean, considering human impact since (at least) the Neolithic and the palimpsest-like construction of 'cultural landscapes', which is built on massive land-use of prior social groups, to which extent can we state that there is purely environmental change? This is, of course, also a methodological issue in both, the sciences and the humanities...

Land degradation occurred during the later 17th century. This statement is lack of evidence, and perishing of livestock may be too weak.

I can only tell from the historical data... the diary states that there is considerable loss of livestock and that cold and dry conditions prevailed. It also says that these climatic conditions and the consequent surface transformation is totally unusual, which, as you say, is of course completely subjective and represents an individual perception of the region. But this is the data – and that is what we have to deal with.

If land degradation has occurred since that time, serious degradation has been continuous till now as population and economy growth even if climate becomes better in the study area. Of course, due to lack of historical data, some things are easily disputable.

I am convinced that exactly this happened: since the 17th century and throughout the modern era, massive degradation has occurred, mostly driven by human overstraining of the regionally very sensitive vegetation. Also, resource exploitation needs to be considered, which has caused increasing loss of groundwater. To which extent this has changed recently due to China's anti-desertification programme, needs to be more precisely considered! I am right now preparing another dataset, from which these hypotheses can be more clearly discussed. As soon as I got the results, I will upload them to the discussion!!

Please also note the supplement to this comment:

<https://cp.copernicus.org/preprints/cp-2021-5/cp-2021-5-AC5-supplement.pdf>