

Clim. Past Discuss., author comment AC1
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Reply on RC1

Mengna Liao et al.

Author comment on "Different facets of dry-wet patterns in south-western China over the past 27□000 years" by Mengna Liao et al., Clim. Past Discuss.,
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Thanks a lot for the comment.

We considered that the shift of deciduous *Quercus*, *Picea* and *Abies* to evergreen *Quercus* and *Betula* around 13 cal. ka BP indicated warming climate and increasing precipitation. Although it is common in China that *Betula* and deciduous *Quercus* mix with each other, *Betula* in generally distributes further north or higher than deciduous *Quercus* does. Therefore, *Betula* probably had expanded to higher altitude in the study area and replaced *Picea* and *Abies* since 13 cal. ka BP. According to the vegetation map of China, broad-leaved deciduous forest distributes in areas with lower temperature and precipitation compared with broad-leaved evergreen forest (see the uploaded supplement). Thus the replacement of deciduous by evergreen *Quercus* and of coniferous forest by *Betula* was the signal of rising temperature and increasing precipitation. This conclusion is supported by the reconstructed temperature from the Tiancai Lake (also in the Yunnan region) and remarkable precipitation increase reflected by the grain-size data (see Fig. 5 in the MS). Between 8~6 cal. ka BP, the variations of pollen data are quite dramatic and a noticeable change was the increase of herbs. We considered this vegetation change primarily reflects a decrease in humidity. This conclusion can be backup with grain size and $\delta^{18}\text{O}_{\text{carbonate}}$ (see the Fig. 5 in the MS), indicating precipitation started to decrease around 8 cal. ka BP. At the same time, temperature reached its highest level since the LGM. This must have enhanced evaporation from the underlying surface and thus favored terrestrial herbs.

Mengna Liao

21 Jun, 2021

Please also note the supplement to this comment:

<https://cp.copernicus.org/preprints/cp-2021-55/cp-2021-55-AC1-supplement.pdf>