Biogeosciences
Discussions

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Interactive comment on "Phylogenetic support for the Tropical Niche Conservatism Hypothesis despite the absence of a clear latitudinal species richness gradient in Yunnan's woody flora" *by* G. Tang et al.

Anonymous Referee #1

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This is an excellent paper well worth publishing that could be further improved by expansion of the discussion as indicated below.

Issues of scale

I note that in Fig. 1h that part of the Yangtzee river centered around Lijang does not appear on Fig. 1h in blue on the map. I wonder is this because the spatial scale of mapping and analysis (10x10 km) hides it? This comment highlights a general issue in that the scale of the GIS is quite large considering the complex topography of the region. I am not sure if there is any way round this as I accept the argument about

higher precision information made by the authors – I wonder is it possible to try a limited run with higher precision data to see what happens? In any case the issue of the scale of mapping relative to extremely rugged topography of Yunnan needs to be discussed somewhere (it is mentioned in Zhang's 2013 Global Ecology paper but only in passing and should be part of the discussion here). I also wonder if setting the boundaries on a political basis could have any impact on the patterns observed – in other words do the same patterns appear if neighbouring areas are included in the analysis? Issues of statistical analysis and presentation In terms of the Environmental data why was Pearson's r used and not Spearman's as the data are probably not normally distributed? This issue may also affect the PCA analysis – it looks good but PCA assumes both some sort of continuous scale in the data, and normal distribution of the data. Were these checked for the data used? A statement on this is required. pH is, of course, not measured on a linear scale – does that have any impact on the interpretation of the results? In Fig. 1i the two red spots are obviously of interest – I may well be wrong but are these areas of acid soils? What's the pH difference between the different colours? In general, we need to know what the boundaries are in the rainbow spectrum scale in Fig. 1.

Issues of data

The authors have made clear that the Fagaceae were not included in their analysis and that the Gymnosperms were later excluded. I accept that the Fagaceae could, unfortunately, not be included but it'd be good to discuss the potential consequences of this to the results as the Fagaceae are so important biologically. I was also unclear what led to the exclusion of ca. 18,000 records from the ca. 60,000 that were georeferenced – what was wrong with them? Of course, the Gymnosperms were excluded from the Phylogenetic analysis as it is based on APGII. But why was APGII used and not the more up-to-date and somewhat different APGIII? Can the consequences of this be discussed? Also excluding the Gymnosperms from the phylogeny seems to remove 2319-1898 = 421 species from the analysis – is this correct or were other species from

other groups removed for some reason? If so what groups and why? I think that there are only about 200 more likely 250 species of Gymnosperm in the whole of China so there appears to be a mismatch.

References

The authors' conclusions are really interesting and it may be worth their relating them to other issues – in particular the work of J.L. Baltzer et al. in 2008 (Functional Ecology 22: 221-231) and in 2009 (Am. J. Bot. 96: 2214-2223) and that of A.C. Hughes et al. in 2011 (J. Biogeog. 38: 2362-2372) all of which relate to the Isthmus of Kra as cited in J. Parnell in 2013 (Nordic J. Bot. 31: 1-15.). It would seem as if drought/water stress is potentially much more important than previously though in a range of ways.

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