

## ***Interactive comment on “Comparative analysis of trade-offs and synergies in ecosystem services between Guanzhong Basin and Hanzhong Basin in China” by Bo-Yan Li et al.***

### **Anonymous Referee #2**

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This study examined the spatial and temporal relationship among four main ecosystem services (ES), including food production (FP), net primary production (NPP), water retention (WR) and soil conservation (SC), of two basins in central china. This study found a trade-off relationships between FP and NPP, and synergistic relationships between NPP and WR, as well as between WR and SC. I think the methods are generally sound, and support the results. The manuscript is easy to follow, and also fit the scope of the journal.

I have several major concerns as follows: 1. This analysis relied heavily on models to quantify different ES, and therefore each model will have its own uncertainty.

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The authors have acknowledged this in the manuscript. However, a formal uncertainty analysis for each model and how uncertainty of each model will propagate to the main results will help reader understand the results better. 2. The trade-off (negative) relationship between FP and NPP is a little bit hard to understand since both FP and NPP is a function of NDVI. Some more explanation on this will help reader to understand the result better. 3. P7L10:  $r_{xy} > 0$  indicates positive (synergetic) relationship, and  $r_{xy} < 0$  indicates negative (tradeoff) relationship. Do you have a significant level here? For example,  $r_{xy} > 0$  and  $p < 0.01$  indicates positive (synergetic) relationship, and  $r_{xy} < 0$  and  $p < 0.01$  indicates negative (tradeoff) relationship. While  $p > 0.01$  is no relationship. 4. This manuscript need a language edits by native speaker.

Some other observations: 1. P7 table: how WR was calculated for different layers? 2. P8 line 3-5, P8 line 20-22, P8 line 11-15: these sentences belong to method section 3. Figure 3 can be in an appendix.

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