

Interactive comment on “Effects of vegetation patterns on yields of the surface and subsurface waters in the Heishui Alpine Valley in west China”
by Y. Liu et al.

Anonymous Referee #1

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General Comments: The researchers undertook an ambitious project aiming at relating vegetation cover and stream water yield for large basins in southern China. The approach they used has merits. The researchers integrated several methods including water isotope sampling, remote sensing for deriving landcover, and examining historical streamflow data. Data are helpful to understand the basic hydrologic processes (relative contribution of water sources) in the study region.

However, I found a few problems in data analysis, interpretation, and presentation.

Those problems resulted in the conclusions misleading and might be erroneous. Although the data are useful for other purposes, the data do not support the conclusions on the scaling effects regarding water yield-forests relations.

Data analysis: There are no data on precipitation and other climate variables for each of the sub-watersheds. Would climate make a difference in affecting the water isotope and water balances and water yield contribution? The complex topography suggests that hydrology is extremely complex and detecting the contribution of vegetation may be difficult.

The researchers sampled on one year in 2004. Would this particular year be representative?

Data Interpretation: The authors presented the relations between forest cover and water yield contribution. Based on this, they concluded that more forests resulted in lower water yield, but higher shrub cover rate caused more water yield - a 'different trend'.

I believe the logic here may not be correct. Firstly, needless to say, contribution of water yield depends on the size of the watershed. For example, basin H and K are the largest ones. They certainly contributed most of the flow - this has nothing to do with vegetation cover. So, Fig 5 was not informative. There would be no surprise to see that watersheds that have more shrubs will have water yield contribution since these large watersheds happen to have higher shrub cover.

Secondly, the precipitation in H, K might be different from others that can cause the difference among watersheds. Thirdly, there was no statistical analysis on the end.

Data Presentation: I would like to see the seasonal (sampled dates) dynamics of water yield and tracer concentration, and contribution of surface/subsurface and ground-water flow.

The decimal points for all values in Table 1- 3 should be consistent.

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Other Specific Comments:

Language: need major revision. Terminology unclear: P1022 line 24 hydrologic traits, should be hydrologic characteristics P1026 line 5 'level-flow' period, not clear about this term P1026 L17 SMOW? P1032 L20 mis-cited 'Jiang et al. (2004)'. That paper concluded that 'water yield positively correlated with forest cover'. That conclusion is questionable itself as well. If one looks carefully, forest cover percentage does not correlate well with water yield (mm) in their study.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 1021, 2006.

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