**Hydrology and
Earth System
Sciences
Discussions**

Interactive
Comment

Interactive comment on "The impact of forest regeneration on streamflow in 12 meso-scale humid tropical catchments" *by* H. E. Beck et al.

Anonymous Referee #3

Received and published: 15 April 2013

I wish I could say I liked this paper – it oozes statistical methodology, there are some (many?) heroic aspects to the work, and must have taken a (very) long time to put together. I wonder how many million computer files were generated whilst the work was being done? At the same time, the infinite detail overwhelms the reader. I have had a few goes at going through it and always tend to lose my way to some extent in the seemingly infinite detail of what was done. I think the conclusion is valid and relevant (that there is no really clear detectable effect on streamflow) but I am not sure just where that leaves the reader.

I think, basically, that the paper has a dual aim of impressing the reader and conveying the work done. I think that the former stuff could be substantially expunged. Some sort of diagram illustrating the methodology conceptually? Some sort of simplification?

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I gather that streamflow records were used, some sort of "normalising procedure" to overcome problems with individual records, and the results correlated with land use change. The result was either no correlation or a weak negative correlation with the percentage of forest.

My recommendation to make the paper more accessable:

(a) Shorten and simplify the abstract, and avoid stuff like Q metrics.

(b) Simplified account of methodology with detailed work either obtainable on request or in an Appendix.

(c) Gross simplification of Tables.

I think the question of errors in the primary streamflow data could be addressed a little. The authors seem to disbelieve their own findings ("Possible explanation for the apparent lack of a clear signal..." but equally, perhaps there isn't a clear signal).

Specifically

Does the manuscript represent a substantial contribution?

Good, but communication compromised by so much detail

Scientific Quality

Approach valid? Yes, although some considerations of error in the stream gauging records would be appropriate?

Results discussed in an appropriate way? Reader tends to be cascaded with detail.

Presentation Quality

Graphics and tables have too much detail for most readers.

Writing is good but "dense"

Overall

The paper is an appropriate piece of work for the journal with excellent methodology. To some extent the methodology overwhelms both the data and the reader. I can not imagine most readers doing anything than going through the abstract and even that is hard-going). So my suggestion is a substantial simplification of the paper with more concentration of the overview and less on the detail

Comments Noted While Reading the Paper

1: The abstract is quite long.

2: A little jargonish – "Q metrics", "mesoscale",

3: Not sure that logging for timber is deforestation.

4: It is a very high rainfall zone so that results from less humid areas may not be very applicable.

Page 3048: Line 10. Don't the reductions in stormflow also go the same way as increased forest water use (i.e. less streamflow?).

5: The paper is quite hard to read and seems to have a number of contradictory statements embedded in it.

Hypothesis 3 embraces all possibilities so will always be true and easily proven. Good to have an axiomatic hypothesis.

6: The three driest months receive 1200 mm per year? Does this mean 400 mm in that period? Ditto for the 3100 mm per year – do we divide by 4? Needs clarification.

7: Acronymns – thus we are investing Q and relation to P but socioeconomic changes in PR are at the bottom of it. I presume PR means Puerto Rico (indeed looking back, it does) but probably better spelt out in full.

8: So the rationale is to use routine stream gauging records and correlate with land use change. Over the years I've refereed quite a few papers with a similar approach (and

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usually inconclusive results). The roughness of the streamflow record is usually pretty bad, so that is something that might be looked at. Can you categorise the accuracy of the data somehow?

7: Daily Q commonly exceeds Daily P when there is significant catchment storage so not sure that this needs filtering.

8: Figure 4: I wonder whether a binary classification of forest/agriculture would be better?

9: Heroic statistics.- 30,000 model runs alone to ensure convergence!

10: After reading a few pages of this, one's head spins with hypercubes, parameter spaces, composite objective functions, etc. Heroic (but perhaps heroic in the sense that the Charge of the Light Brigade was heroic but the strategy wasn't great....). For lesser mortals, the stuff on many of the pages can only really be skipped over. For a comprehensible paper I think that this stuff needs condensing.

11: A new concept – "per pixel trends"

12: I think that some sort of block chart illustrating what was done conceptually really would help. The reader gets lost in the world of jargon or "modern" improvements of old techniques.

13: The discussion, including alternative explanations, could be dramatically shortened.

14: Tables 1-6 probably contain too much information for most journals.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 3045, 2013.