**Hydrology and
Earth System
Sciences
Discussions**

Interactive comment on "Opposite distribution
pattern of streambed hydraulic conductivity in
losing and gaining stream reaches" *by* X. H. Chen
et al.

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Review: "Opposite distribution pattern of streambed hydraulic conductivity in losing and
gaining stream reaches."

This paper investigates the differences in hydraulic conductivity measurements ob-
served in gaining and losing reaches of the Platte river and some of its tributaries. The
authors collected data at 8 sites, classified four of them as gaining and four of them as
losing. They then collected around 10 vertical K distributions at each of these sites and
ran some statistics on their data.

I really liked their hypothesis that the "gaining" streams would have higher K values

because small sediment would be pushed into the stream, and that the "losing" streams
would have lower K values as the pores were clogged with sediment. This seemed very
logical and I don't know of other papers that have tried to look into this specifically.

The classification system for determining gaining vs. losing was not consistent. Four of
them were based on water temperature and the other four based on other information
they already had. Considering that the classification is key to making sense out of the
K values and conclusively stating there is a difference, I would have liked to have had
more information about the other methods and would like to know why they didn't use
the temperature method everywhere to ensure consistency and confirm other data.
This is huge, the paper falls apart if you do not believe their classifications.

The authors assume the reader knows which K method they have selected, but I do
not believe there is a standard that everyone uses, so I would like to have more details
provided about their method. This may only take a couple sentences, but it needs to
be in the paper in section 2.3.

Some of the discussion is more suitable for methods or background and should be
relocated, details are provided by line number.

The English in this paper is pretty bad. The wrong preposition is used repeatedly
and other small grammatical issues make the paper hard to read. I would suggest
the authors find someone outside if their research group to read the paper and make
grammatical corrections for them. I have noted some of the issues below, but I'm sure
I did not catch all of them.

If the authors can adequately address these concerns, I believe it will be acceptable
for publication.

Line by line comments/corrections

Title: There is a gaining and a losing pattern, so I think this should be patterns. I
think the authors should work more on the title. I'll suggest the following, but I bet they

can find something even better: "Losing and gaining stream reaches have opposite hydraulic conductivity distribution patterns."

Page 1694

Line 11: contrast should be contrasting

Line 14: change to "These contrasting"

Page 1695

Line 1: remove "s" from runoff

Line 1: delete "as well" (not needed and sounds informal)

Line 11: delete "to"

Line 12: change "is" to "are"

Line 15: you specify the diameter of the cylinder, but do not tell us what type of test was used. I'd like to know the type of test without jumping to the Rosenberry paper, but if you don't want to include that, then I wouldn't bother telling us the diameter size.

Page 1696

Line 10: change to "particles in small scale sediments"

Page 1697

Line 1: change to " leading to a decreased streambed K at greater depths than laboratory experiments can illustrate"

Line 4: change to "of measuring streambed hydraulic conductivities for larger depths"

Line 8: change have to has

Line 23: change "be in" to "form"

Line 24: change increase to "increases"

Line 26: "idea that a study is" should be "ideal if a study were"

Page 1698

Line 1: "under losing condition or mainly under gaining condition." should be "losing or predominantly gaining."

Line 3: make conduct "conducted"

Line 3: What type of tests? There are many permeameter tests, please tell us about yours.

Line 12: confluence is a noun, but you are using it as a verb

Line 16: conjunctive sounds funny to me here, might be ok. I'd say "combined". Sentence reads awkwardly, maybe add a comma after water, or separate this into two sentences.

Line 17: loses should be "lose"

Line 20: both ins should be "on"

Line 22: It should read "The" other

Line 25: perhaps change under gaining conditions to "gaining reaches".

Page 1699

Lines 4-12: Which sites did you use temperatures to determine gaining vs. losing? The use of geological and hydrological data to determine other 4 sites conditions is vague. Tell us more. Even though you had data about those sites did you try the temperature method as well to make sure it worked everywhere?

Line 16: Add an "an" before in situ

Line 16: in situ should be in italics because it is Latin and should not have a hyphen.

Line 16-23: There are lots of in situ permeameter methods. Your citations may specify

which one you're using, but don't make the reader look it up.

Page 1700

Line 1: add an "a" before Geoprobe

Line 2: add a "The" before Geoprobe

Line 24: provided should be "provides"

Line 25: Tell us what method is being used in the lab

Page 1701

Lines 16-20: Was there any correlation between stream water EC and type of site (i.e. gaining/losing?)

It would be nice to have a table for easy reference stating which sites are "gaining" and which are losing" This could fit into Table 2 or Figure 1.

Line 18: in should be at

Line 25: change "can easily see" to "reveals"

Line 25: change mixture to "mixed"

Page 1702

Line 5: (medium sand, coarse sand, and gravel) isn't much longer and is easier to read Lines 19-20: You speculate on this representing a transitional phase. It might, but I don't quite buy the "probably". References? Also I'm not sure it belongs in results.

Line 28: don't say see later, tell us where (section)

Page 1703

Line 1: in should be "at"

Line 9: lower permeability of what steam bed? Lost Creek? Then change the to "this"

Line 22: add values after conductivities

Page 1704

Line 1: was should be were

Line 7: delete "part"

Lines 8-20: These jumped back to present tense, when you were in past tense. It needs to be consistent. I think it should be past tense.

Line 15: delete part

Line 21: add an s to pattern

Line 21: is should be are

Line 23: add an s to pattern

Line 24: change to "differ very much from the patterns for the four losing stream sites"

Line 26: change "The analysis" into "This analysis"

Line 28: make draw drawn

Page 1706

Lines 4-11: This should move to methods.

Line 13: increase should be increasing (both times)

Line 15: increase should be increasing

Page 1707

I think Line 20 on this page through Page 1708 line 23 would be more suited to a background section.

Line 23 add an s to Streambed.

Page 1708

Line 2: Add "The" before "physical process"

Line 11: Add an "s" after "influence"

Line 25: add an "s" after pattern (both times) and an "es" after process

Page 1709

Line 3: "deposit" should be "deposition"

Line 12: insert "the" before streambed

Lines 26-27: I would expect the location of the coring to matter, can you justify collecting some from the bank? Has anyone compared bank sampling to center of stream sampling? Add a citation?

Page 1710

Line 2: delete "the"

Page 1711

Line 18: "stream water decreases in upwelling zones" would be better

Line 19: results should be result

Page 1712

Line 13: near should be nearly

Figure 1: Not sure why we have 2 maps, it seems like it could all fit on one without zooming.

Figures 3 and 4: Could you add in uncertainty associated with each depth? (std or min, max....)

Figures 3 and 4: These show the same thing for different cases, I don't see a need to

split them into 2 figures.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 1693, 2013.