

Interactive comment on “Experimental evidences for bifurcation angles control on abandoned channel fill geometry” by Léo Szewczyk et al.

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Received and published: 19 February 2020

Review of Szewczyk et al. “Experimental evidences for bifurcation angles control on abandoned channel fill geometry” by John Shaw, University of Arkansas This manuscript describes experiments showing controls on sand plug length and volume at the distributary bifurcation of a river. The experimental design and analysis convincingly show that under these experimental conditions, (a) an increasing diversion angle reduces sand plug length and volume, and (b), that an increased slope in the channel with the depositing sandplug produces larger length and volume. The generalizations to field scale sandplugs is reasonable, although the generalization to the permeability structure of a channel belt is perhaps too far. I find these results to be a thorough and clear scientific advance. Apart from a sprinkling of sentence edits (see below), it is

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well written, illustrated, and argued. I think it will make a strong contribution to ESURF. I have sat with this paper for three days, and I can't find a significant flaw. Hence, I recommend it for publishing with the technical below.

Minor comments

Line 8: such as sandplugs

L12: Recommend letting the abstract reader know that this is an inverse relationship.

L13-14: Consider revising these lines so that initiates is not used twice.

L16: lacks *some of* the complexities. Physical experiments are valuable because they include a great deal of complexity.

L17: It is unclear how this paper “improves the realism of fluvial models. Consider revision.

L28: Donselaar and Overeem (here and elsewhere in manuscript).

Equation 2. Is it really $2^{2/3}$ in this formulation?

L172: How is it know that velocity was lowest? Was it visual inspection? This is fine, but please say so. Or is the an interpretation due to the presence of the bar? In the later case, I would not necessarily interpret that the velocity was lowest.

L185: Scenarios?

L239: hypothesize

L276: Far above the *bottom* ones. I don't know what bottom adds here.

L292: “Repartition” is used four times in the manuscript, but I do not know the meaning of this word.

L292-3 incidence angle used twice in the same sentence.

L313: explicitly name the relation between width and discharge Lacey's law, if you will

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refer to it as such in line 319

L314: disconnected channels

L315-316: a somewhat confusing sentence.

L344: "field investigations" instead of "investigating on the field"

L367: The authors seem to suggest that a channel plug could extend 3-4 point bars, or 3-4 bends into an abandoned channel. This seems like an extremely long way based on my intuition. Are there any field studies that show this type of extension?

Interactive comment on Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2019-79>, 2020.