

# Reply to comments and queries of Anonymous Referee #2 for the manuscript “Deriving principle channel metrics from bank and long-profile geometry with the R- package cmgo”

Original manuscript title: Deriving principle channel metrics from bank and long-profile geometry  
with the R-package cmgo  
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## Please note:

- This document contains the comments of the first anonymous reviewer in **green text color** and our replies in **black text color**.
- Line numbers of the Reviewers' comments refer to the original manuscript, while line numbers in our replies refer to the updated manuscript. They are consistently given in brackets, e.g. [76].
- When figures are referenced in our replies they refer to this reply letter if written without brackets and to the manuscript if written with brackets, e.g. [Figure 2]

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## Reply to comments of Anonymous Referee #2

We thank anonymous Referee #2 for the supportive and very constructive comments on our manuscript, which we used to improve our manuscript. Below, we answer the comments one by one in detail.

The referee has acknowledged the fact that this work was submitted as a **technical contribution**. Technical articles are a new class of manuscripts at ESurf, and their introduction has been recently decided at the Editorial Board Meeting at the 2017 EGU General Assembly (pers. comm.). The type of this article has also been communicated to the Editor.

- This technical paper presents a computational tool (R-package) for estimating channel metrics from elevation models.

Thank you for this assessment, but we need to slightly narrow down the type of input data. Actually, the data input is not represented by DEM's but by information about the channel bank geometry. That means lists of bank points with x-y-coordinates.

- The paper is well written and concise. In general, the manuscript does a nice job providing overview of several existing methods. Still, there are some major weaknesses to be addressed to put this work on a more appropriate level (even when considering it as a technical note) for publication.

Thank you very much for this assessment of our work. We hopefully will address all weaknesses previously in the manuscript. Based on your comments and the comments of the first anonymous referee we substantially worked on the evaluation of our results with manual control measurements.

- The work would be greatly improved with presentation of an application of the methodology (of the new tool) to a real dataset.

We agree. Already, all examples in the plots refer to real field data examples (see also Acknowledgments). Moreover, we tested our tool with field data and did a comprehensive debugging with problems that arose from these applications. For example [Figure 1] represents data from the Erlenbach, a mountain channel in the Swiss Prealps. However, we added a chapter [8. Evaluation of the data quality] assessing the quality of the results with manual control measurements. Other changes have not been made.

- A (simple) comparison between model-derived characteristics and field-observed characteristics is warranted to demonstrate the applicability of the methodology. It is not needed to develop some new and novel insight into the field site selected (since this is a technical note), but there is a need to demonstrate the functionality and ability of the new package. Without such an application, it is not clear that the tool "works" in the most basic sense.

Accepted. Changed in [8. Evaluation of the data quality] and [Figure 9, 10, 11, 12] and [Table 2].

- In addition, if this example application of the package were to be coupled to a comparison the tool developed in this manuscript with other existing tools, that would be justified.

Agreed. We took this very good advice and evaluated also a different product for comparison. Announced in [88] and realized in [8. Evaluation of the data quality].

- The comparison could highlight the strengths and weaknesses of the new approach relative to what is already "on the market". This would really help to underline the need for this R package to the community at large.

A valid point. We address strengths and weaknesses now in [9. Concluding remarks].

- One could envision, for example and at the simplest level, a meta-table comparing the strengths and weakness across the different software tools currently available that do similar things (building on the literature review section). Nice to represent this with a "check/no check" table like you would see on a software specification comparison? This could range from the more science-specific (Estimates river width) to the more general (Uses open source platforms).

Awesome idea. We added [Table 1].

- For a more advance approach and to truly strengthen the presentation of this work, it would be good to take an example site where field observations exist and not only apply this new tool (as suggested above) but also apply few other existing tools. A comparison across how well (similar/different) each does and a validation against the observations would justify publication of this note.

Indeed. We tested our tool now against another product. So far we tested it only against the most accessible (in terms of source code) and versatile (in terms of parametrization): RivMap.

- Without the above aspects, the study does not do more than present the code. Also, and just to be clear, I think the above effort (or some variation of the above) is needed to have this manuscript consider as a technical note. This effort would not be enough to elevate this study from a technical note to a full science manuscript for the journal – that would require some advancement in understanding (which is well beyond the scope of this study).

Agreed. We do not aim for a scientific manuscript. But with our changes and replies to the referees we hope to meet now the quality standards for a technical note.

- The manuscript submitted by Golly and Turowski presents a very useful tool to extract river metrics, such as channel width. This parameter is required for many studies, as pointed by the authors. Therefore, the topic is of interest and might fit with the journal scopes.

Thank you for this assessment of our contribution. After the comprehensive study of other products, we really think that cmgo adds for certain applications (addressed in [9. Concluding remarks]) an unprecedented value to the fluvial scientists community.