Geoscientific Model Development Discussions

Geosci. Model Dev. Discuss., author comment AC3
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Reply on CC1

Zuzanna M. Swirad and Adam P. Young

Author comment on "CliffDelineaTool v1.2.0: an algorithm for identifying coastal cliff base and top positions" by Zuzanna M. Swirad and Adam P. Young, Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2021-269-AC3, 2021

* Thanks for the opportunity to comment on your manuscript. I am Andres Payo, lead developer of CliffMetrics and would very much like to see the comparison with your CliffDeliea Tool but I have one major concern with the current version of the manuscript which is regarding the lack of information about which version, and software and set up you have used to create the CliffMetrics outcomes. In addition to the code added to the GMD Payo et al. (2018) manuscript, CliffMetric is also available via SAGA tools (URL = http://www.saga-gis.org/saga_tool_doc/7.9.0/ta_cliffmetrics_0.html). Which version have you used for this work is unclear. Most importantly, which set up have you used is also unclear. I would appreciate if you include the input values as shown in Table 6 Payo et al. 2018 or SAGA input table. Some of the jagginess that you seem to obtain with CliffMetrics (your Figure 7) are could easlily be avoided by iterating the CliffMetric set up parameters. CliffMetric runs fast to facilitate the iterative delineation of the cliff top and toe. Your own method has this iteration embeded in the methodology. As the manuscript stands now, I can not tell if your method is performing better than CliffMetric or you are just miss-using CliffMetrics by using the wrong iterative set-up.

Thank you for your insightful and helpful comments. We initially used the 'distance-to-trendline' method that is the basis of Palaseanu-Lovejoy et al. (2016) and Payo et al. (2018). We have now added *CliffMetrics* using default parameters for a more direct comparison. We now clarify this in lines 128-130:

"The *CliffDelineaTool* results were compared with the distance-to-trendline method (Palaseanu-Lovejoy et al., 2016) and *CliffMetrics* (SAGA GIS version; Payo, 2020) using input parameters (seaward transect end points, transect length, and no transect smoothing) to match the same cross shore transects used for *CliffDelineaTool* and the default vertical tolerance of 0.5."

We added *CliffMetrics* RMS (default settings) to Tables 3 and 5, as well as plotted it in Figure 7.

We further discuss how using *iBluff* and *CliffMetrics* would impact the distance-to-trendline method in lines 222-229:

“We compared *CliffDelineaTool* to the distance-to-trendline method which forms basis of *iBluff* (Palaseanu-Lovejoy, 2021) and *CliffMetrics* (Payo et al., 2018). However, *iBluff* and *CliffMetrics* both include additional steps to improve results and correct erroneous cliff base and top positions. *iBluff* uses manual transect shortening during pre-processing, and outlier removal using smoothing window, similar to *CliffDelineaTool*. *CliffMetrics* uses manual quality control and iterative parameter selection (Payo et al., 2018). The *CliffMetrics* results presented here used default parameters and predefined transects to provide a direct comparison to *CliffDelineaTool.* However, one of the strengths of *CliffMetrics* includes the ability to quickly iterate parameter set up. Therefore, the results could be improved using iterative parameter selection and varying transect length and orientation.”

* Minor concerns: In Page 2 Line 45, the following sentence is not true "They used a constant transect length with decrease in model performance, but considerable time gain (Payo et al., 2018)." We did not found a decrease in model performance relative to PL2016 model and we explicitiky indicate that "By avoiding the need for fine-tuning the profile length, the proposed method speeds up the delineation process but does not eliminate the need for the screening of the model outputs." Please clarify what do you mean regarding decrease in model performance.

As suggested, we modified lines 47-48 to:

“Payo et al. (2018) used a constant transect length to reduce pre-processing time.”