

RC – Reviewer comment

AR – Author response

<p>RC11</p>	<p><i>I agree with the authors that calculating erosion rate with a calculation method that suits the study best and has the most updated parameters is advisable. However, my assumption is that Ocotpus as a data base will be used by many scientists that might lack the detailed knowledge to choose between methods and their biases (or wouldn't do the calculation out of convenience).</i></p> <p><i>Therefore, my suggestion would be to add the output from Balco calculators to the Octopus data table. Columns to include for ersion rates could be (1) the CAIRN-St erosion rate, (2) Balco-St without shielding, (3) Balco-Lm or LSD with shielding, and (4) Balco Lm/LSD without toposhielding.</i></p>
<p>AR11</p>	<p>(1) For users that lack the detailed knowledge to choose between scaling schemes etc., it is probably better to include less options, rather than more, so that we avoid even more confusion or inconsistencies on how the OCTOPUS data is used.</p> <p>(2) Regarding topographic shielding, the box plot below shows percent differences between denudation rates calculated using the LSDn scaling scheme for all CRN Int and CRN AUS data with and without correcting for topographic shielding. Red lines indicate the median uncertainties (both internal and external) on the calculated denudation rates. In the case of Be-10, ~99% of the data have differences between shielding and no-shielding that are below ~6%, and below the median external uncertainty on the calculated denudation rates (~7.7%). The median difference is only ~1% and the interquartile range is 0.3 to 2.6%.</p> <p>Given (1) and (2) above, we suggest including [CAIRN-St], [Balco-LSDn with shielding] and [Balco-LSDn without shielding], and not including [Balco-St without shielding].</p>

RC12	<p><i>The authors could then have an explanatory paragraph in the manuscript stating that for studies that focus on areas with medium to high erosion rates, the St scalings are OK. When comparing global erosion rates, or when including very low erosion rates in a data set, the Lm/LSD rates are more advisable. For steep catchments with non-uniform topography and/or quartz-distribution topographic shielding should be used, whereas it should otherwise be neglected.</i></p>
AR12	<p>We will update the text with more information and might also include a comparison plot between St and LSDn, acknowledging that this will duplicate Greg Balco's blog post and the RIVERSAND paper (https://doi.org/10.1017/rdc.2023.74).</p> <p>Regarding topographic shielding we will refer readers to DiBiase (2018; doi: 10.5194/esurf-6-923-2018) rather than provide recommendations.</p>