

Dear Editorial Team of Solid Earth, dear Reviewer,

Thank you for your remark for a technical correction on our manuscript. Our answer is found below along with the changes we have made to the text. Additionally, please note that the affiliation of the author Bernard Brixel needed to be changed into Geological Institute, ETH Zurich, Zurich, Switzerland.

On behalf of all authors,  
Peter Giertzuch

*The authors have greatly improved the quality of the manuscript and responded well to the previous comments. I have only one remaining comment, before the manuscript can be accepted for publication.*

*Page 11, line 228:*

*“This is possible on difference data, due to the linearity of the migration routine, and makes the resulting profiles comparable to migrated GPR sections (Dorn et al., 2012).”*

*Please explain briefly what you mean by “linearity of the migration routine” and the underlying assumptions. I believe you assume constant GPR velocity between both reference GPR wavefields?*

The underlying assumption to apply the Kirchhoff migration on differenced data, is that the migration operator is a linear operator. This is what we meant with “linearity of the migration routine”. The GPR velocity is also assumed to stay constant, however this is not the reasoning behind the approach. We tried to make this clearer now, by rephrasing on Page 11, line 228:

*Migrating difference data is useful, since Kirchhoff migration is a linear operator and makes the resulting profiles comparable to migrated GPR sections (Dorn et al., 2012).*

Additionally, we have added the information on the used migration routine on Page 9, line 196:

*Finally, the reflection sections underwent a Kirchhoff migration (from the CREWES Matlab package, Margrave and Lamoureux, 2019) using a constant velocity of 0.12 m/ns that was confirmed by the tomography results, and other GPR surveys at the test site (Giertzuch et al., 2020; Doetsch et al., 2020).*