Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2020-204-AC2, 2021

Geoscientific Model Development Discussions
Open Access
EGU

Interactive comment on "Effects of Transient Processes for Thermal Simulations of the Central European Basin" *by* Denise Degen and Mauro Cacace

Denise Degen and Mauro Cacace

cacace@gfz-potsdam.de

Received and published: 6 January 2021

We would like to thank RC2 (Dr. Thomas Poulet) for his comments which improved the scientific merit of our study. In the attachment to this post, you will find a file (RC2_revision.pdf) where we detail our point by point revision, each RC2's comments is followed by our answers (highlighted in a different colour). As also for our post to RC1's comments, we also attached additional informative materials as figures. There are three figures in total (two about the details of the geological model and one of a table summarizing the properties plus geological information) that we added as Appendix material to the revised version of our manuscript as requested both by RC1

Printer-friendly version

Discussion paper

and RC2. Please also refer to the revised manuscript in this regard.

Please also note the supplement to this comment:
https://gmd.copernicus.org/preprints/gmd-2020-204/gmd-2020-204-AC2-supplement.pdf

---

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2020-204, 2020.

Printer-friendly version

Discussion paper

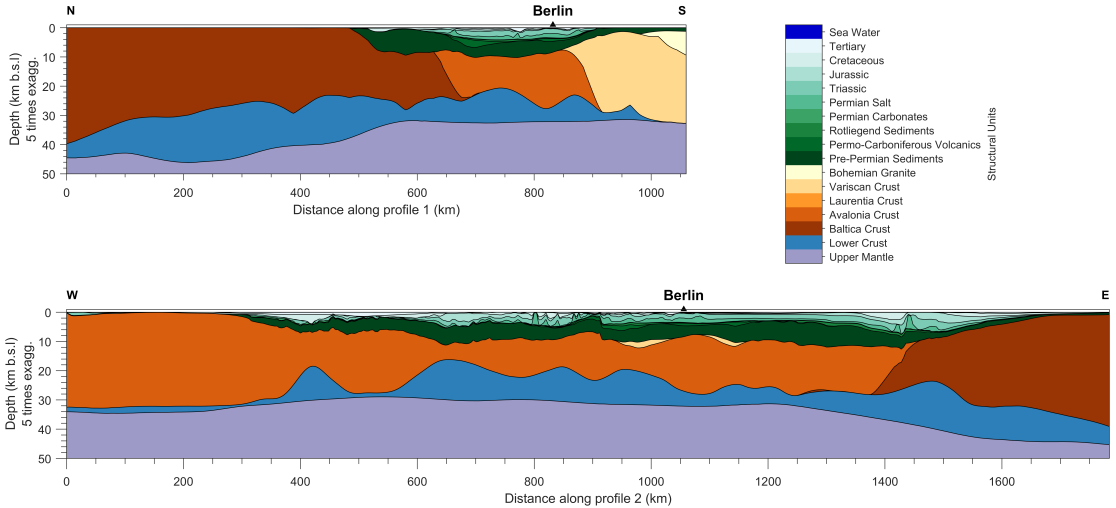

Fig. 1. base maps of the main geological units in the 3D CEBS geological model

Printer-friendly version

Discussion paper

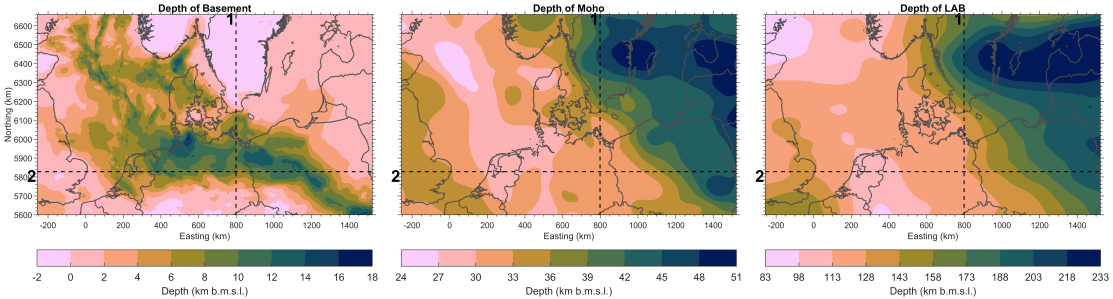

Fig. 2. selected geological profiles across the 3D CEBS model

Printer-friendly version

Discussion paper

Table A1. Geometrical and rock phsical properties of the different units integrated in the 3D structural model. Symbols listed: h (av)=average unit thickness, h (max)=maximum unit thickness, λ=thermal conductivity, H=heat production rate, ρ=density, and c_p=specific heat capacity. The unit volume has been computed based on the average thickness of each unit.

Acronym -	Layer -	main lithology -	h (av) km	h (max) km	volume $10^5 km^3$	λ $Wm^{-1}K^{-1}$	H μWm^{-3}	$\rho \times c_p$ $MJm^{-3}K^{-1}$
CE	Tertiary (Cenozoic)	sand, silt and clay	0.35	4.7	6.63	1.5^{a}	$0.7^{??}$	2.95^{b}
CR	Cretaceous	limestone with marl	0.32	3.5	6.05	$1.95^{??}$	$1.0^{??}$	$2.80^{??}$
J	Jurassic	claystone with silt- and sandstone	0.2	4.45	4.05	$2.1^{??}$	$1.6^{??}$	$3.19^{??}$
T	Triassic	silt- and sandstone	0.5	8.9	9.85	$2.1^{??}$	$1.6^{??}$	$2.90^{??}$
Z1	Permian Salt	rock salt	0.24	8.85	4.61	$3.5^{??}$	$0.3^{??}$	$1.81^{??}$
Z2	Permian Carbonates	gypsum and carbonate	0.06	2.2	1.13	$1.95^{??}$	$0.8^{??}$	2.51^{c}
R	Rotliegend Sediments	claystone with silt- and sandtone	0.13	2.25	2.46	$3^{??}$	$1.5^{??}$	2.67^{d}
PCV	Permo-Carboniferous Volcanics	rhyolite and andesite	0.045	2.5	0.85	$2.5^{??}$	$2.4^{??}$	$2.67^{??}$
PPR	Pre-Permian Rocks	strongl compacted clastics	1.8	14.9	34.8	$2.9^{??}$	$1.5^{??}$	$2.4^{e\ f}$
BG	Bohemian Granite	granite and diorite	0.056	12.09	1.06	$3.1^{??}$	$2.9^{??}$	$2.4^{??\ ??}$
VUCC	Variscan Upper Crystalline Crust	granite and diorite	1.8	36.7	34.4	$2.8^{??}$	$1.3^{??}$	$2.5^{??\ ??}$
UC,L	Upper Crust Laurentia	granite and diorite	1.5	33.7	28.9	$2.8^{??}$	$1.2^{??}$	$2.5^{??\ ??}$
UC, A	Upper Crust Avalonia	granite and diorite	6.6	34.3	125	$2.9^{??}$	$1.3^{??}$	$2.5^{??\ ??}$
UC, B	Upper Crust Baltica	granite and diorite	13.5	40	237	$2.75^{??}$	$0.9^{??}$	$2.5^{??\ ??}$
LC	Lower Crust	gabbro	8.7	37.2	165	$2.7^{??}$	$0.8^{??}$	$2.6^{??\ ??}$
LM	Lithospheric Mantle	peridotite	111	182	2100	$3.95^{??}$	$0.03^{??}$	$3.86^{??\ g}$

[a] (?)
[b] (?)
[c] (?)
[d] (?)
[e] (?)
[f] (?)
[g] (?)

Fig. 3. Table geological and properties

Printer-friendly version

Discussion paper