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Geoscientific Model Development Discussions

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

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First of all, we would like to thank RC1 for all points raised which helped us to improve not only the readability of the manuscript but its scientific merit. In the attachment to this post, you will find a first file (RC1_revision.pdf) where we detail our point by point revision, each RC1's comments is followed by our answers (highlighted in a different colour). We also attached three figures (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 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-AC1-supplement.pdf

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

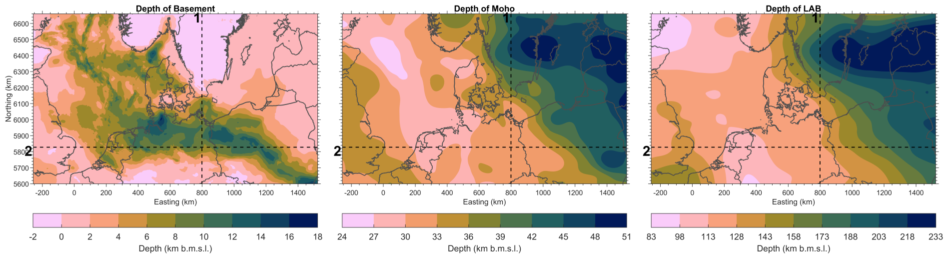

Fig. 1. base maps of the main geological units in the 3D CEBS geological model

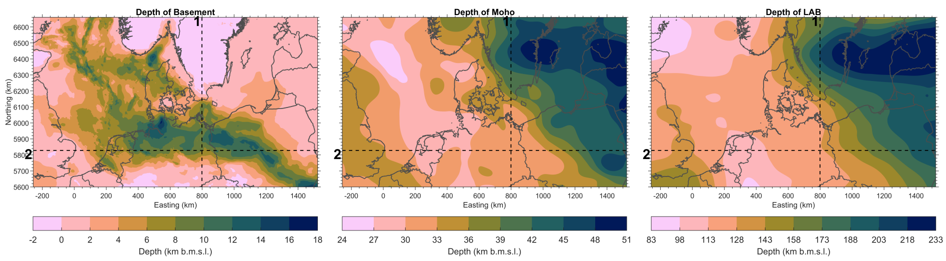

Fig. 2. selected geoloigcal profiles across the 3D CEBS model

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)	h (max)	volume	λ	H	$\rho \times c_p$
-	-	-	km	km	$10^5 km^3$	$Wm^{-1}K^{-1}$	μWm^{-3}	$MJm^{-3}K^{-1}$
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