Solid Earth Discuss.,
https://doi.org/10.5194/se-2020-154-RC2, 2020

Solid Earth Discussions
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EGU

Interactive comment on "Insights from elastic thermobarometry into exhumation of high-pressure metamorphic rocks from Syros, Greece" *by* Miguel Cisneros et al.

Valentin Laurent (Referee)

valentin.laurent@univ-orleans.fr

Received and published: 18 November 2020

The manuscript "Insights from elastic thermobarometry into exhumation of high-pressure metamorphic rocks from Syros, Greece " by Miguel Cisneros, Jaime D. Barnes, Whitney M. Behr, Alissa J. Kotowski, Daniel F. Stockli, and Konstantinos Soukis submitted for publication in Solid Earth combines elastic barometry (quartz-in-garnet and quartz-in-epidote barometry) with oxygen isotope thermometry to quantify the pressure-temperature (P-T) evolution of retrograde metamorphic rocks of the Cycladic Blueschist Unit (CBU). The work is well structured and presents interesting P-T data, especially the ones obtained from epidote and Qtz/Calcite boudins as they

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allow to add robust constraints on the retrograde evolution of the CBU. However, there are important deficiencies in their bibliographic review that need to be addressed by considering and citing relevant literature (see my comments in the annotated PDF). For example, lines 61-62 the authors write 'the exhumation history of the CBU between ∼52 and ∼25 Ma remains enigmatic and poorly constrained'. This is not true and they can't write that without exploring all (and citing some of) the works that have studied blueschist-facies rocks in the Cyclades and mainland Greece (I estimate it to be around 30-40 studies or even more). It is very important to note that these rocks are some of the most studied HP-LT rocks worldwide and the authors can't say that to justify the 'novelty' of their study. Additionnally, the data are sometimes over-interpreted. For example, there are no evidence in this study that garnets crystallized at peak P-T conditions while the authors mainly use their garnet P estimations to say that maximum P-T conditions reached by the CBU is ∼1.7 GPa / 500-550 ËŽC. In the contrary, many studies (e.g. Groppo et al., 2009; Dragovic et al., 2012; Ashley et al., 2014; Laurent et al., 2018) suggest that most garnets in the CBU crystallized before peak P-T conditions, during the late prograde evolution of the CBU, at pressures very close to the ones that have been measured in this study (∼1.7 GPa - I remind that the T of garnet crystallisation has not been constrained in this study). Finally, there are some issues with the figures. For example, Fig. 1 is supposed to be a geological map of Syros but the tectonic structures (e.g. faults and shear zones) are not represented. As it is, this map is more a lithological map of Syros and I have noted many inconsistencies for the lithology in some area (see the annotated PDF). Moreover, in Figures 2b, 5a , 5b, 5c and 5d the scale is clearly not correct. In my opinion the work has to be profoundly reconsidered before publication. I do have several suggestions written in the annotated PDF (114 comments) that will hopefully serve to further strengthen the paper.

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2020-154/se-2020-154-RC2-supplement.pdf

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