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Solid Earth
Discussions

Interactive comment on "Resolving uncertainties in the application of zircon Th / U and CL gauges to interpret U-Pb ages: a case study of eclogites in polymetamorphic terranes of NW Iberia" *by* Pedro Castiñeiras et al.

Manuel Francisco Pereira (Referee)

mpereira@uevora.pt

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The work of Castiñeras and co-authors is attractive because it addresses a very interesting topic that cuts across many areas of Geology.

This manuscript is well structured, although I think it can be improved with some changes. Section 4 can be divided into two: section 4. Methods and section 5. Results. I also found some parts of the text that should be improved (see annotated pdf file).

The original analytical data is of high quality and deserves to be published making it available to the scientific community.

All figures are well prepared, they are quite simple but they illustrate the text efficiently. Still, I suggest the inclusion of two new figures for improving the content of this work: a figure with photos and/or drawings showing the field relations observed in the outcrop; and another figure with photographs of the thin sections showing the texture and mineral associations of the eclogite and host gneiss.

As regards the content of this work, the discussion in section 5.3 "Implications for the geochronology of the upper allochthon" does not explore some of the questions that remain unanswered after we have reached this point in the text.

The last figure shows a compilation of the protolith ages and of the ages of metamorphism available from the different allochthonous units of Iberia and Armorican Massif, distinguishing the different geochronological methods used. The presented geochronological data are extremely interesting and at the same time very questionable. Why is this topic no longer explored based on the data obtained in this work?

For example, in the Cabo Ortegal Complex, how can you explain the different ages obtained with U-Pb (zircon) and Ar-Ar(amphibole)? Are there criteria to assume that some ages represent the peak of high-P and others the exhumation process?

Another example, in the Ordoñez Complex, how can you explain the older ages obtained with Ar-Ar (amphibole) compared to the more recent ages estimated with U-Pb (zircon and monazite)? It will be possible that an eclogite block-in-matrix could preserve Ar-Ar ages (amphibole) older than U-Pb ages (zircon or monazite) recorded in the host high-P gneisses?

I believe that this valuable work may have greater projection and interest if this topic will be further discussed.

M. Francisco Pereira

Please also note the supplement to this comment:
https://www.solid-earth-discuss.net/se-2020-53/se-2020-53-RC1-supplement.pdf

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