

Interactive comment on “Tectonostratigraphy of the Mérida Massif reveals a new suture zone exposure in SW Iberia” by Rubén Díez Fernández et al.

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Referee’s comment #1: “It will be useful to confront arguments that consider the mafic-ultrabasic rocks of Mérida as representing a Cadomian island-arc (Bandrés et al., 2002, 2004), instead of oceanic lithosphere (i.e. ophiolite) as you proposed (this study)”

Authors’ reply #1: The interpretation of the Precambrian rocks of the Mérida Massif as a Cadomian island-arc is based on, among other things, the assumption that all of them were part of the same piece of lithosphere. Neither major tectonic contacts were identified within the Precambrian ensemble, nor was even this ensemble divided into tectonostratigraphic units aimed to distinguishing between potentially different geody-

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dynamic settings for each of them. Our proposal tries to build a new understanding for the region from scratch. And for that, we need to build some pillars before introducing a discussion on the geodynamic setting that may explain some specific features of the tectonostratigraphic units. We are setting the basis and thankful for the attention this manuscript is calling. We are not saying that the Cadomian island-arc model does not work for this region, or for some rock ensembles of this region. We just claim our right to start and follow a different path and, maybe, reach a different or more refined conclusions when new data is available and the time comes for it. So far, we prefer to leave that discussion aside since the sole identification of the mafic-ultramafic ensemble as an ophiolite is quite of a new thing for Iberia. The concept ophiolite is not restricted to oceanic lithosphere. This concept has been evolving during the last decades since it was officially coined in the 70's. We must admit that in one sentence of the manuscript we refer to the mafic-ultramafic ensemble of Mérida as a slice of oceanic lithosphere. But everywhere else in the manuscript we are using the terms continental, oceanic, and transitional crust. Nomenclature is important in this regard, as it may lead to misunderstanding. But it is also important to note that we are also using the word “affinity”, in order to make it clear that in our opinion the mafic-ultramafic ensemble of the Mérida Massif is something clearly closer to an ocean lithosphere than to a continental lithosphere. Certainly the modern ophiolite concept is quite flexible, and there exist ophiolites related not only to mid-ocean ridges, but also related to other types of marginal basins. We recommend reading literature about the evolution of the ophiolite concept (authors such as Drs. Dilek, Furnes, Pearce, etc. could be a good start).

Referee's comment #2: “It will be possible to discuss if the Ediacaran Calzadilla ophiolite (Arenas et al., 2018) and the one now proposed by Díez-Fernández and coauthors (this study), are related in terms of their formation and emplacement.”

Authors' reply #2: The relationship between both ophiolites is a different matter and is far from the scope of the manuscript, which is focused on the recognition, introduction and brief description of tectonostratigraphic units, along with some broad geological

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implications. Certainly the manuscript would gain from it, but we need to solve other things before such a discussion is even possible. So, no, such discussion is not possible yet, but it soon will. Not many years ago we started a line of research dealing with suture zone exposures in SW Iberia. We are happy to see this line of research is leading us to some unexpected, maybe revolutionary places. Meaningful and groundbreaking lines of research need time to bloom as they need solid grounds. Step by step, friends, step by step.

Referee's comment #3: "It will be important to clarify whether garnet from the Mérida mafic-ultramafic rocks represent porphyroblasts or/and porphyroclasts, i.e., they grew or not with metamorphism and deformation; this has implications for the interpretation of the Sm-Nd dating obtained on garnet."

Authors' reply #3: In these rocks, garnet is not an orthomagmatic mineral, as it grows onto fabrics formed under solid-state conditions and somewhat implied by former descriptions by Bandrés (2001) and papers derived from his PhD Thesis. In relation to the suggested Sm-Nd isochron, since garnet is not an orthomagmatic mineral, the Sm-Nd dating is not providing an igneous age. Whatever the case, the fabrics in the mafic rocks are Neoproterozoic (Cadomian in a broad sense), so the regional inferences we propose (Variscan vs Cadomian tectonics) would remain the same. This is also supported by further observations made by Bandrés (2001), who recognized that early Cambrian rocks from nearby sectors of the northern Ossa-Morena Complex rest unconformably onto metagranitoids and metasedimentary rocks that exhibit a regional foliation similar to that in the study area. We will add this latter reference to the discussion in the revised manuscript in order to reinforce our conclusions.

We are very thankful for the comments provided by Dr. Pereira, since we know his intention is to make the Geology of Iberia progress. We value and recognize his experience in SW Iberian geology. We are also thankful he is not providing anonymous comments to the manuscript. Courage in science is a rara avis lately.

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