

Solid Earth Discuss., author comment AC3
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Reply on RC3

Hamed Fazlikhani et al.

Author comment on "Variscan structures and their control on latest to post-Variscan basin architecture: insights from the westernmost Bohemian Massif and southeastern Germany" by Hamed Fazlikhani et al., Solid Earth Discuss.,
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Reply letter to referee comment by Prof. Uwe Kroner (RC3) on the article se-2021-95

Dear Prof. Kroner,

Many thanks for your comments and suggestions which indeed helped in improving the quality of our manuscript. Please see below list of comments and authors reply. We would be happy to further discuss and clarify our replies if needed.

Comment 1: *The Geological setting needs a concise review regarding the loads of tectonometamorphic constraints published in the last years (see for this the recent publications of Hallas et al. 2021 and Schönig et al. 2020 and references therein).*

Reply to comment 1: Thank you for your suggestion and references. We have slightly revised the geological settings accordingly. However, since the focus of the manuscript is the presence of Variscan shear zones - not necessarily their possible initiation mechanism and timing – and their influence on the post Variscan structural configuration, we believe that more information regarding the Variscan orogeny itself might lengthen the manuscript. We plan to discuss implications of our findings in Variscan orogenic development in an another manuscript in greater details where we will give more comprehensive review regarding the loads of tectonometamorphic constraints.

Comment 2: *For example, the Fichtelgebirge constitutes the footwall of the Münchberg Massif but the hanging wall of Variscan high pressure nappes inside the Erzgebirge Fichtelgebirge Zone. By no means the lithologies of the Fichtelgebirge constitutes autochthonous units of the Saxothuringian Zone as sketched in figure 1.*

Reply to comment 2: Thank you, we have revised figure 1 accordingly.

Comment 3: *Saxothuringian Basement is not an appropriate term for the Basement Seismic Facies - BSF3. The Saxothuringian basement encompasses various nappes (BSF1), shear zones (BSF2) and the Cadomian basement plus early Paleozoic overstep sequences of the Autochthonous Domain (sensu Kroner et al. 2007). Therefore, BSF1-3 constitutes Saxothuringian Basement.*

Reply to comment 3: Thank you for your comment. We have updated our terminology in revised version.

Comment 4: *If you correlate BSF3 with lithologies of the Autochthonous Domain (why not) than a remarkable result of your study is the occurrence of BSF3 just SW of the Fichtelgebirge as evidenced in figure 8, i.e., the interpretation of the NW-SE seismic profile FRANKEN-1803. Please discuss the possible occurrence of the Autochthonous Domain SW of the Fichtelgebirge.*

Reply to comment 4: This is a very interesting comment that surely has valuable implications for the assemblage of Variscan terrains during the orogenic event. In order to keep the focus of this manuscript first on presenting new seismic reflection dataset and then on the structural setting and controls west of exposed Variscan units (Bohemian Massif) we would like to preserve descriptions and discussions related to the Variscan tectonics in an another dedicated contribution summarizing recent published works and their significance in regard to presented Variscan structures and units in this manuscript. Please also see reply to comment 1.

Comment 5: *In your 3D sketches of Figure 11 you propose a generally W-directed tectonic transport which deviates at least 45° from the classical late Variscan (N)NW shortening (Wurm 1926, Stephan et al. 2016). Do you mean with this direction the initial W(SW) nappe stacking or the finite displacement the entire stack?*

Reply to comment 5: Shown general W-directed tectonic transport refers to the initial W-SW directed nappe stacking. We have added additional text in the figure 11 caption clarifying this issue.

Please also note the supplement to this comment:

<https://se.copernicus.org/preprints/se-2021-95/se-2021-95-AC3-supplement.pdf>