

Interactive comment on "High-grade deformation in quartzo-feldspathic gneisses during the early Variscan exhumation of the Cabo Ortegal nappe, NW of Iberia" *by* F. J. Fernández et al.

T Blenkinsop (Referee)

blenkinsopt@cardiff.ac.uk

Received and published: 4 January 2016

General Comments This paper us a very detailed and interesting study of exhumation of continental high-pressure rocks, that addresses the channel flow model. The detailed structural relationships do not support that model. The paper is based on careful structural work supported by geothermobarometry from other studies, and some new geochronology. While the general argument seems sound, there are several ways in which it could be strengthened. Perhaps the most important is simply to clarify the terminology and improve the English. This would go a long way to making the paper easier to follow. Some suggestions are given below in the last section. The final figure

C1764

is not as clear as it needs to be. The D1 stage is fine (except to note that arrows pointing towards each other, presumably representing strain, should have equal sizes), but D2, particularly the top figure, is fairly mysterious. How does this normal sense shear zone work if it is not a form of channel flow? And where, in either stage, do the recumbent folds form? The lack of clarity in this final stage undermines the excellent detailed description that has preceded it. Part of this problem is that it is very difficult to work out from the text what the relationships are between the different types of shear zone and folds. Providing that great clarity can be achieved on the final model (largely by improving the last figure), there is no doubt that the scientific significance and quality of this work is high. The presentation needs improvement as noted above. There is a great deal of data presented in this short paper. This sound work is not fully realised in the paper, which probably needs to be expanded to get the message across more clearly. This can be achieved in a moderate revision.

Specific Comments P2, L15. What does "lateral" mean in this geometry? This is an ambiguous term. P2. L18. Which figure in Shreve and Cloos? P2, L20. Give some references to these models P3, L26 and elsewhere. "orogenic tectonic pile" seems unnecessary. Why not just tectonic pile? P3 L27. Geochemical (ultrabasic) and mineralogical (mafic) descriptions should not be mixed. P4, L3. Closer than what? P4. Is the lower tectonic unit a formal name? In some cases it is capitalised, but not in others. P4, L13. What is a neat contact? That is not geological description p6, L16, 17, elsewhere. "Calc-silicates granulite block-in-matrix" is a pretty awkward description for a shear zone rock. Can that be improved? Are these breccias? Block-in-matrix is not a noun on its own. P11, L8. No younging evidence has been presented that would be necessary to conclude about a facing direction. Should this be verging, rather than facing? P11, L17. No need for both tight and the interlimb angle as a fold description. Tight means interlimb angles less than 30°. P11, L22ff. Using the shapes of the eclogite blocks as a strain marker is a great idea, but it needs some caution. For a start, these are dimensions as measured on exposed faces, and therefore necessarily incomplete. How does that affect the results?

Technical Corrections P2, L30 explained P3, L9-10. Can this one sentence paragraphs be merged with another? P3, L25 of P3, L31 alkaline P4, L4 insert "it" P4, L10 relatively autochthonous rocks P4, L11. Use Greater than at the beginning of the sentence P4, L19 characterizes P5, L14 autochthonous rocks P5, L22 defines P6, L8 autochthon P7, L4 contacts P9, elsewhere: metapsammite P9, L8. Put appear at the end of the sentence P9, L18 to rather than with P9, L18. This rather than such P10, L20. Put difficult at the end of the sentence P11, L20 thrust P11, L29 "this" not such P11, L30 progressively P12, L6 maximum P12, L11. Preserved P11, L17 greenschist P14, L22. Start sentence with A P14, L28 delete rocks P.15, L3. Contemporaneous? P.15 L7 that instead of the? P15, L20 Ma needed P16, L28 active P16, L30 have ranged

C1766

Interactive comment on Solid Earth Discuss., 7, 3541, 2015.