Abstract Line 3 you say traditionally in respect of the transition zone- I think there has not been enough time to work up a tradition just for the TZ so I would say

“conditions of the deeper mantle such as the transition zone...”

# Line 10 of the abstract I would change “work” to

“implications of these results with respect to the...”

Line 14 "MARD () assemblage, for example" next line "responsible" better than "to blame" in my view

Line 35 I think you need some references here particularly concerning the immiscibility and thermal stability of hydrous phases

Line 43 "During quenching..."

Page 7 line 126- is that right are there really on bridging oxygens- surely there are terminal oxygens before the melt is hydrated arent there? At the end of a polymer chain for example.

Line 138 monomers etc should have some reference

216 "to satisfy.."

219 "used by de Koker et al. (2013)"

You need to make some sort of break between equations 6 and 7 because it just looks like a mess- although they will presumably do their own typesetting.

Did you happen to see the following paper that may be relevant to your MgO-SiO2 model

Harvey JP, Gheribi AE, Asimow PD (2015) A self-consistent optimization of multi component solution properties: Ab initio molecular dynamic simulations and the MgO-SiO2 miscibility gap under pressure. GEOCHIMICA ET COSMOCHIMICA ACTA 161 146-165.

304 I would say "and therefore within experimental uncertainties."

339 "...and the experimental observations is up to approximately 100°C and could....."

338 I would say "water-poor compositions" rather than "fluids"

359 I would make this a little bit clearer- presumably you mean up to 30% stishovite as all chambers would presumably differ in stishovite content- "solid stishovite crystals were missed from the assembly, which would have been up to approximately 30 %"

I know it is a very clever word but do you really mean "inviscid". My email programme has underlined it. But I just looked it up and apparently you can get "inviscid burgers"- or at least there is an equation for them- I think i had one of those once- very sloppy. But doesnt it mean no viscosity at all.

Line 417 - it is not really the hydrogen that causes the drop in analysis totals but mainly the oxygen to which it is attached.

434 I would say "Both of these observations, therefore, raise inconsistencies"

445 "...models for the incorporation of..:"

Table 3 I used e like this once and someone asked if I meant e or x10. looks a bit like a fortran output though.

492 You need to state some initial H2O content to say that partial melting will occur across the transition- i.e."... will cause partial melting given initial h2O contents of...." or do I miss something.

Better still I would say "could result in partial melting if initial H2O contents..." As it is written it is not clear why melting occurs.

Ok thats all- very nice work.

But Bob what I normally do in this situation is read the paper and attempt to reproduce the model using the data as presented in the paper. This normally shows up any errors- because i normally copy the equations as I have written them- dont get me wrong this normally does not stop me from publishing some errors but it really helps to make sure that I have communicated everything needed to redo the model. I find the coolest thing is when someone contacts me or I read some paper where they have reproduced my calculation. I would normally do this but I just dont have time anymore but I would really ask you to make sure the equations and numbers given are all correct and that all the data is given that someone would need to reproduce the model. You might even give it a thought as to how you would reproduce the model if you were reading this paper. The more people that have the chance to do that, the more likely you are of being cited. If you have source files that can be used in some programme like Burnman- then I would up load these also as supplementary data.

Anyway thats all

Great work sorry it took so long

All the best