

Reply corrections:

NB: Line numbers are according to the previous manuscript version

Figure 2. I cannot find "Top" figure.

- Thanks for noticing, we have removed “Top” from the figure caption

Figure 3. In S3, where are the normal faults generated in S2? I also find color difference of asthenosphere between S5 and the legend.

- We have drawn in abandoned faults (as faint dotted lines), and checked the colours. There should be no difference in asthenosphere colour between figure and legend.

Line 88-89: I can understand sorting rifting by active and passive, but what about back-arc rifting and orogenic? Are they passive or active? Or do they belong to new types?

- We see that the text is a bit confusing as these definitions are somewhat overlapping, and have rephrased things for clarity:
 - “It must be noted that we consider these five stages to be representative of the general evolution of rift systems, independent of the tectonic environment in which they develop; rifting may be initiated by asthenospheric upwelling (active rifting) due to for example mantle plume activity or slab break-off, or by far-field stresses (passive rifting) due to for example subduction rollback or, continental collision. These different causes leading to rifting can overlap in space and time, and have inspired multiple rift classifications in the literature (e.g., Merle, 2011; Sengör, 2020; Peron-Pinvidic, 2022), yet the expression of rifting processes generally follows the same general trend as outlined above.”

Line 131: Delete "from occurring"

- The issue seems to be the use of “avoid” in “although magmatism can avoid this shift from occurring”, so we have slightly rephrased the last part of this sentence, which now reads as follows:
 - “although magmatism can **prevent** this shift from occurring.”

Line 144: Only half bracket before v.

- Thanks for noticing, we have added the missing bracket.

Line 173: Localisation. Be consistent with British.

- We have corrected it here, and in a couple other instances in the text.

Line 191-194: This sentence is too segmented. Better rephrased.

- We have shortened the sentence for better clarity. It now reads as follows:

- “As a consequence, the structural inheritance the individual rift segments follow can result in different structural styles along each rift segment, ranging from orthogonal rifts to oblique and even transform systems (e.g., Corti et al., 2007; Agostini et al., 2011).”

Figure 5-legends: Underplating of what?

- In the light of current uncertainty if this is in fact “Magmatic underplating”, we have now changed things to “High-velocity materials ($V_p > 7.2$ km/s) in the legend

Line 253: Tilting.

- We have corrected this here, and in a couple of other places in the text

Line 268-269: Do not use too many perhaps. One of the best examples is.....

- We have rephrased the start of the sentence as suggested, it now reads as follows: “One of the best examples may be the onset of microbial carbonate deposition in hypersaline basins ...”

Line 284: Mw 7.

- It is corrected

Line 289: Delete "significantly"

- Not sure why it needs to be removed, it seems to be a useful addition to the sentence:
- “Fault networks in rifts are also less well ordered, because they accumulate **significantly** less strain when compared to subduction zones.”

Line 316: Shanxi rifts. Weihe rift is part of it.

- Thanks for noticing, we now only refer to the Shanxi rift as a whole, and modified the subsequent sentence to reflect this change.

Line 350: is->are

- It is corrected

Line 378: Delete just.

- We decided to remove the reference to Eritrea altogether, as we describe the Afar Rift as a region here, which is split between Eritrea, Ethiopia, and Djibouti. As such, we would have to mention all countries and this will become superfluous, we felt. The text now reads as follows:
 - “... the 2011 eruption of the Nabro volcano caused several fatalities (Goitom et al., 2015). Moreover, the 2011 Nabro eruption resulted in the expulsion of 1.5 megatons of SO₂, ranking it as the largest eruption since that of Mount Pinatubo in 1991 ...”

Line 387: Delete especially.

- It is deleted here. NB: We also reworded “especially” in (old) Line 851, which now reads: “This is of particular relevance when it comes to intra-plate earthquakes ...”

Line 401: Delete occurrence of.

- It is deleted

Line 471: Delete "Still, perhaps"

- We have replaced it with “However”, as there needs to be some indication of contradiction at the start of this sentence.

Line 474: Delete such.

- It is deleted

Line 492: extensional

- Thanks for noticing, it is corrected

Line 498: Delete the comma after environments

- It is deleted

Line 522: What do you mean "base metals important to energy transition"?

- From Blowes et al. (2014), which is added as a reference:
 - “Base metal is a wide-ranging term that refers either to metals inferior in value to those of gold and silver or, alternatively, to metals that are more chemically active than gold, silver, and the platinum metals (AGI, 1957). Accordingly, a review of base-metal mineralogy would encompass much of the world’s metal production and geology. Usage of the ‘base metal’ term in the mining and minerals industry is rather loose, but a common application is to the nonferrous metals excluding precious metals. These include copper, lead, zinc, nickel, and tin. Kesler (1994), however, grouped nickel with ferroalloy metals along with manganese, chromium, silicon, cobalt, molybdenum, vanadium, tungsten, niobium, and tellurium and copper, lead, zinc, and tin as base metals. Among the base metals, tin is by far the least significant in terms of volumes consumed and monetary value.”
- The sentence now runs as follows:
 - “Sediment-hosted mineral deposits are the largest global resource of lead and zinc (Goodfellow et al., 1993; Mudd et al., 2017), both base metals important to the global transition to renewable energy (Blowes et al. 2014; IEA, 2021).”

Line 526: What is a focussing pathway?

- The idea is that faults can focus upward fluid flow, we have rephrased the sentence to avoid confusion:

- "... which could have provided permeable pathways focussing upward fluid flow ..."

Line 535-537: This sentence is too loose to read. Rephrase it.

- We have rephrased things, while splitting the sentence in two parts. It now runs as follows:
 - "By finding correlations between geophysical and geological observational datasets and the locations of known CD-type and MVT deposits, researchers try to limit the exploration space for these deposits (e.g., Hoggard et al., 2020; Lawley et al., 2022; Burisch et al., 2022). For example, Hoggard et al. (2020) found that all giant deposits lie within 200 km of the edges of cratonic lithosphere."

Line 544: Delete happening.

- It is deleted

Line 553: What does "such" stand for? Be more specific.

- We have deleted "such" in the sentence, as it was the first discovery of hydrothermal venting on the sea floor, thus avoiding confusion. Moreover, we have slightly modified the end of the sentence, so that it now reads as follows:
 - "The first seafloor hydrothermal activity was discovered in the Red Sea oceanic spreading centre (Miller et al. 1966), and many more sites have been identified afterwards"

Line 558: "or the other way around". Not clear. Delete or rephrase.

- We have deleted it to avoid too long a sentence.

Line 562: Delete magmatic, and above old and thick. Repeated.

- It is rephrased as follows:
 - "Kimberlites are rocks formed from highly volatile ultramafic eruptions in cratons, shields and mobile belts ..."

Line 566: Delete "break-up, specially"

- It is deleted

Line 568: Delete those of, and which was emplaced

- The sentence is rephrased to:
 - "Other magmatic ore deposits linked to rifting are layered intrusions such as those of the Bushveld Complex in the Kaapvaal Craton, which likely formed in a back-arc setting and contain, amongst others, copper, nickel and platinum-group metal deposits (Clarcke et al. 2009)(Fig. 11)."

Line 683: Icelandic->Iceland

- We believe that "Icelandic", as "in the Icelandic case" is fine here

Line 684: Too oral for set up camp.

- We now use “have established themselves”

Line 769: How to define “fresh”? Altered rocks may have undergone carbonation.

- As “unaltered”, we have now defined this as follows:
 - “... CO₂ can also be chemically stored when it reacts with unaltered (fresh) exhumed rocks, a process known as carbonation ...”

Line 773: Mantle rocks are ultramafic, not mafic.

- We now write “(ultra)mafic” to reflect this nuance

Line 777: Delete the first and second “the”

- They are deleted

Line 786: Now-extinct means abandoned or ancient? Be clear.

- We meant “abandoned” and have corrected the text accordingly