

## On the roles trees play in building and plumbing the critical zone

Final minor corrections

**Page 2 line 9: insert a space between e.g. and the reference Dokuchaev.**

**Page 2 Lines 17 and 18: In the sentence:**

*As such, a specific focus is on trees -- the most successful entities...*

**Include the word "terrestrial".** Marine productivity can be higher according to Chapin et al 2011 fig 6.5 and table 6.4. Trees are the most successful terrestrial entities... Also, **replace the two hyphens with an em-dash (throughout the manuscript; there are 10 instances and these are not syntactic constructions but punctuation).**

**Page 23 top sentence:** *An important aspect of this hypothesis and hypothesis 6 is...* this IS hypothesis 6! **Get rid of " and hypothesis 6".**

**Figure 1: Last sentence:**

*In these ways, trees act as chemical stirring agents that remove nutrients from the rooting depth and return them to the top of the soil and act as mechanical stirrers moving material from depth to the land surface and then downhill.*

This sentence runs on a bit, and it implies that it is primarily bioturbation that moves material downhill rather than gravity. Surely bioturbation increases the likelihood of gravity-driven transport of material (erosion) further down the slope? **Consider rewording this sentence, or at least the last clause.**

**Figure 2c.** The green arrow labeled Nutrient Acquisition points into soil and not up the tree, showing nutrient redistribution rather than acquisition. **Either label the arrow as such, or "nutrient acquisition and redistribution" with a second green arrowhead pointing up the tree, or, if the label is left as it is, the arrow should only point up the tree.**

**Figure 4.** Technically "mycorrhizae" refers to the tree-fungus symbioses rather than the fungi themselves. **Better to label the hygroscopic water as "fungi?", or possibly as "mycorrhizal fungi?",** with question marks, as I am sure there are also limits beyond which fungi cannot access tightly-bound water and we don't know those limits.

Table 1. The following sentence:

*These fungi colonize inside the plant cell of absorptive roots and are most noted for their ability to improve phosphorus acquisition and other relatively immobile nutrients.* **should be reworded so that "acquisition" applies to the other relatively immobile nutrients as well as P, for example: "...their ability to improve acquisition of phosphorus and other relatively immobile nutrients."**