

Interactive comment on “COSMOS: The COsmic-ray Soil Moisture Observing System” by M. Zreda et al.

Anonymous Referee #3

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General comments:

The paper "COSMOS: The COsmic-ray Soil Moisture Observing System" describes a new methodology to estimate area-averaged soil moisture and, thus, fill the gap between point and satellite measurements. The cosmic-ray probes, methodology of measurements and calibration, and the processing to estimate soil moisture from neutron counts are presented. Some example data are also provided.

Useful information on the physics behind the process and how to interpret the measurements is given in the paper, which also reviews some ongoing studies in this research field. However, it is more a review than a scientific paper, with some redundancies in different sections, maybe because they try to be self-contained. Apart from

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that, some paragraphs are written in a language more appropriate of an advertisement than of a scientific paper.

(i) The terminology "neutronavka" is introduced to name the cosmic-ray probes (CRP). This is not the standard nomenclature for this kind of instruments, and can lead to confusion to some readers. Plus the instruments are referred as neutronavka, CPR or COSMOS probe within the text, which leads to confusion. I strongly suggest to remove neutronavka from the manuscript and use CRP instead.

(ii) References to papers in preparation should not be used.

Specific comments:

- Section 2 could be shortened by deleting redundancies.
- Sect. 2.5.4. Results from other probes in the network should be looked at before making this statement.
- Fig. 5 does not add any additional information to the text and could be deleted. Same with Fig. 11 (if it is kept, what does A stand for in this figure?)
- Fig. 2: meters -> m, sec -> s
- Fig. 3: Resolution should be improved. The image is blurred and symbols can not be distinguished clearly.
- P4525: Which were the selection criteria to choose the location of each of the sites in the COSMOS network?
- P4530 L13: Appendix A1 should be Appendix A
- P4531: There is no real conclusion in the "Concluding remarks" but, again, a short advertisement. Last paragraph of this section should be moved to the "Intro" (if not removed).