

Interactive comment on “Assimilation of near-surface cosmic-ray neutrons improves summertime soil moisture profile estimates at three distinct biomes in the USA” by R. Rosolem et al.

Anonymous Referee #1

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The authors try to demonstrate the merits of assimilating cosmic-ray neutron measurements in a land surface model. The trial of this kind is very innovative, since the integrated soil moisture profile signal can be used to update soil moisture states at different layers simultaneously. The only limitation is that other factors that may affect cosmic-ray neutron measurements cannot be explored with the current OSSE. This limits the application of the approach developed in the manuscript. It is understandable though to keep that part of discussion in other works. Therefore, it is suggested to accept this manuscript with minor revision.

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The major concerns appeared when trying to understand the data assimilation procedure and the experimental setup. It is suggested to make these two parts more explicitly, which will help readers to understand the points easier. For the detailed comments, please check the attached PDF.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/11/C1951/2014/hessd-11-C1951-2014-supplement.pdf>

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